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Gleanings in BEE CULTURE

March 1960

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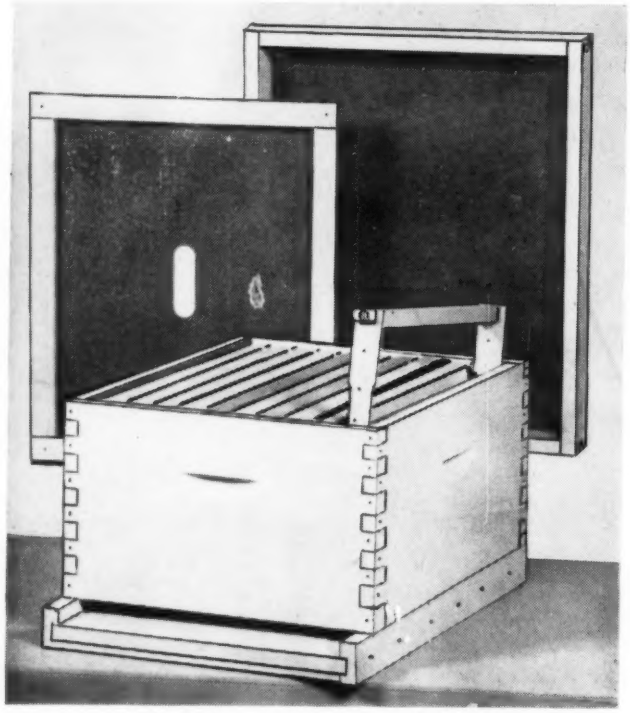

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Gleanings in Bee Culture

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87 Years Continuous Publication by the Same Family

COVER PICTURE — The average beekeeper may not realize the immense amount of painstaking effort and skill required to produce laying queens in quantity early in the season. To secure early queens, grafting must begin early in March. This southern breeder is placing a frame of grafted queen cells, approximately 60, into a queenless grafting colony for acceptance. There is no place in the U.S.A., other than the southern tier of states, where early laying queens can be secured. Our hats are off to the southern queen and bee breeders who render an invaluable service to our beekeeping industry.

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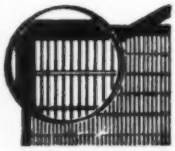

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4. Use your own Honey labels on Bear.
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7. Honey and Bee Story printed on the boxes.
8. Everyone will like to squeeze Honey out of the Bear, especially children.
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10. We can send you sample Bear in Box, filled with Honey, at once, for $1.00. We will pay postage.
11. Bear can be furnished with or without box.
12. We can print your name on bottom of Honey Bear Box in quantity lots.

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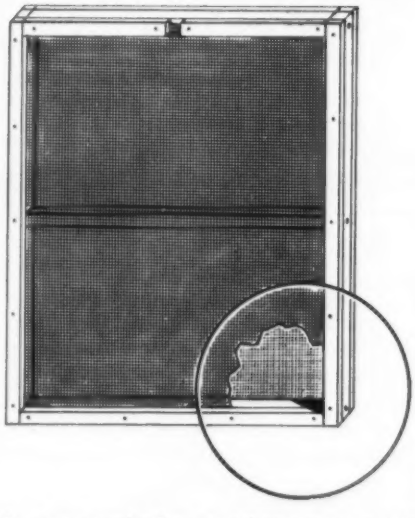

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In a **super market** you have a vast selection of goods at very low prices — that is just what we have.

Take for instance our double screens. Nobody else lists them and you need them to use in requeening and for dividing your colonies into two-queen colonies to prevent swarming and to greatly increase your production at a minimum of cost.

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THE WALTER T. KELLEY CO., Clarkson, Ky.

Monthly HONEY Report

WALTER BARTH
Field Editor
San Antonio, Texas

WHILE ENROUTE to the Federation Meeting in Phoenix I stopped and visited food markets to become familiar with pricing and packs of honey. It was readily evident that the Arizona honey market was very grade and flavor conscious. In fact, I have never seen honey anywhere that showed more care in labeling. Packaging followed U.S. grading and better than 98 per cent of the jars on the shelf indicated one flavor or another. If no specific flavor identification was possible then it was classified as either wild flower or desert flower honey.

Here are some price quotations for comparison in your own area:

16 oz. Mesquite honey, ...39¢
16 oz. Sage-Clover chunk honey, 65¢
8 oz. Sage-Clover chunk honey, 39¢
12 oz. Orange honey, ...37¢
2 lb. Mesquite honey, ...59¢
1 lb. 8 oz. Orange honey, ...65¢

To those who are not familiar with either Orange, Sage, or Mesquite, all are fine honeys like good Clover.

There was a general sigh of relief when the Federation decided to table any further action on the Enabling Act. A lot of confusion has been created over this measure and we can only hope that the dust will settle in time for some action at the next convention in Omaha.

New Products

Morton frozen foods have entered the cake field and one of their first entries was an all butter and HONEY cake. It proved to be delicious. It is one of those fresh frozen, heat and serve pastries.

While there are many products using honey I stumbled onto an unusual one in an El Paso restaurant on my return home from Phoenix. It was a pleasure to see every table in this large restaurant complete with honey, and better still, seeing folks abundantly using honey. This was a restaurant serving Mexican food, and with each order came a plate of Sopaipilla (pronounced Sopi-pe-yah). These hollow light rolls are of a puffed dough, rolled out like biscuits and dropped into hot fat. The end of the roll is torn open and honey is poured in. It is a very fine shell and when filled with honey it is out of this world. It was so good that I purchased two packages of the mix for home use.

Sopaipilla, and its use with honey, was developed by the famous Hacienda restaurant of Albuquerque, New Mexico. Today a 10-oz. package of Sopaipilla Mix, as manufactured by the Sopaipilla Mfg. Co., Old Albuquerque, New Mexico, sells for only 29 cents. The mix is sufficient to make 16 sopaipillas. If you want a treat, try them.

No one leaving the Phoenix convention could go without words of praise for the nice honey displays. A lot of effort went into them. The Superior Honey Company put up a fine diversified display that included the famous honey bears and honeybee dispensers. Different flavors of western honeys were shown, but of particular interest to many was the Holiday gift package of honey. It was a well prepared package designed to attract a new and as yet untapped honey market. . .that of business gifts.

The Superior Honey Holiday pack holds six round 8-oz. bottles of fine honey; Orange, Clover, Sage, Mesquite, Buckwheat, and a Sage-Clover blend. It takes some time and thought to prepare this item but the results should be rewarding. Try your banker as the first customer, as most banks give gifts to their directors etc. at Christmas. A honey-pack is always attractive and unusual. If this idea sounds good, remember, you can't make your plans too early.

Use the Master Queen Grafting Tool for fast, easy and accurate transferring.

$3.60 each

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Italians — Caucasians

	1 to 99	100 up
2-lb. pkg. w/q	$3.45	$3.35
3-lb. pkg. w/q	4.45	4.35
Nice large queens	1.00	.95

To air mail queens, add 5¢ each queen
Queens clipped and painted, 10¢ each queen.

All queens are personally reared, shipped when you want them, and your order appreciated.
Order 1 or 1000

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CARNIOLAN & CAUCASIAN QUEENS

These queens are Line-Bred for many generations for honey production, gentleness and early build-up. Will meet your every need in beekeeping. Booking for early March delivery.

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Quantity discount. Safe delivery in U. S. and Canada only.
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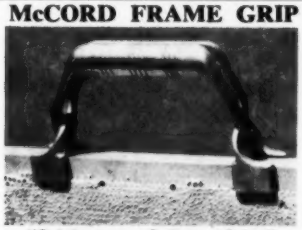

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BRIGHT 3-BANDED ITALIANS

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39 Years as Shippers

— Prices —	1-11	12-100
2 lb. pkg. with queen	$4.00	$3.75
3 lb. pkg. with queen	5.00	4.75
Untested queens	1.10	1.00
Tested queens	2.00	1.75

NORMAN BROS. APIARIES
RAMER, ALABAMA

PACKAGE BEES — QUEENS
CAUCASIANS—MIDNITES—ITALIANS
We do our best to serve you with the best.

QUEENS

1 to 24	$1.50 each
25 to 99	1.40 each
100 up	1.30 each

Add 25¢ each for Midnite queens.

PACKAGE BEES

	2-lbs. w/q	3-lbs. w/q
1 to 24	$4.40 each	$5.60
25 to 99	4.20 each	5.30
100 up	4.00 each	5.10

Add 25¢ per pkg. for Midnite Queens
No charge for clipping and marking.
Write for prices on truckloads with exchange of cages.

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Quality Bred

Starlines **Midnites** **Italians**

York Bee Company is still the best source of supply for package bees and queens for commercial uses and for the hobbyist. Starting in 1926, a square deal and satisfaction guaranteed has permitted a continual growth enabling us to supply both old and new customers. From Italians only, York Bee Company now offers the latest in bees, the Starlines and Midnites representing the latest in research and development of the best strains ideally suited for modern beekeeping practices.

Shipments go by express, parcel post, or your truck. Sufficient help and size to provide rapid loading facilities with a minimum of delay. Currently booking dates for spring delivery; shipments start April 1st depending upon seasonal weather conditions.

Pkgs. with Starline or Midnite Qns.

Quantity	1-24	25-99	100 up
2 lb.	$4.80	$4.55	$4.30
3 lb.	6.00	5.75	5.50
4 lb.	7.20	6.95	6.70
5 lb.	8.40	8.15	7.90

Extra Queens—Starline or Midnite
$1.75 $1.65 $1.55

Queens Clipped 10¢. Clip and Mark 15¢ each additional. TERMS: Small orders cash, larger orders $1.00 deposit per package and balance two weeks prior to shipping date.

Pkgs. with Italian Queens

Quantity	1-24	25-99	100 up
2 lb.	$4.50	$4.25	$4.00
3 lb.	5.70	5.45	5.20
4 lb.	6.90	6.65	6.40
5 lb.	8.10	7.85	7.60

Extra Queens—Italian
$1.45 $1.35 $1.25

QUEENLESS packages — deduct $1.00 per package; TESTED QUEENS — add $1.00 per package or queen.

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(THE UNIVERSAL APIARIES)
The Strains Preferred by Leading Honey Produces

MARCH 1960

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
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APRIL 1960

SUN	MON	TUE	WED	THU	FRI	SAT
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MAY 1960

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
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22	23	24	25	26	27	28
29	30	31				

Producing Package Bees & Queens

VALERY L. GARON
Donaldsonville, La.

The use of a two-way radio system to relay incoming orders to the field unit is especially useful where customers want fast service. Queen yards are miles from the office and a special trip is prohibitive.

THE SUCCESSFUL running of a package bee and queen shipping organization is a complex operation. It consists of two main phases, queen rearing and bee shipping. Aside from these are other smaller phases such as maintenance of outyards and equipment, shop work, office work and problems inherent to beekeeping, such as farming, pests and high cost of materials.

Queen Rearing is the Backbone of a Shipper's Business

Without high quality queens there would be very little chance of making a success of beekeeping. Customers know what they want and they do want good queens above all. In order to rear superior queens, an excellent breeder queen must be used from which to graft. Our own breeder queens are chosen for their excellence in performance.

We have learned through experience that the condition of the cell building colonies affects the quality of the queens produced. The strength of these colonies must be kept to a maximum. Packages of bees are added to our hives twice a week in order to insure maximum strength. In 1959 we added 1,071 pounds of bees to our cell builders during March, April, May and June. This is in addition to the bees produced by the cell colony. We consider a cell builder strong only when the bees are "boiling over" on top. A second requirement for the production of high quality queens is a plentiful supply of pollen, used for royal jelly, available to the cell builders.

The cell hives must be watched very closely not only to keep up the strength but also to prevent the premature issue of a virgin queen. One early hatching queen can destroy about 25 dollars worth of cells in one sweep. If she is left in the cell hive she will do the same to the next batch of cells which are put into that hive.

Good Locations Essential

Good locations are very important in maintaining a successful queen yard. A steady pollen supply is of primary importance. Artificial feeding (syrup) is generally practiced when there is a dearth of nectar.

We prefer to remove our queens from mating nucs as soon as possible after they start to lay. This will help the next cycle to produce more queens. When a queen is allowed to remain in a nuc

Partial view of queen mating yard. Picture was taken in winter when nucs were empty.

At queen yard, Valery Garon receives special rush orders for queens via 2-way radio.

for a long period of time she tends to lay too much for the nuc's good. Overcrowding is the result. The nuc becomes unbalanced by having too much brood and bees and the queen ends up with very little comb space in which to lay.

One of the most important factors in raising queens is to have excellent cells. Here again the influence of the cell builder is seen. For a period from April to August this past season, 64 per cent of our cells produced first grade queens. This is a high average when consideration is given to the fact that the cells had to be culled and poorer queens killed. This also takes into account a period of very bad weather when queen production was low.

The last and possibly the most important step in the production of superior queens is to have a good drone source. By good we do not mean just in numbers, but good in blood line. Our queen mating yard is completely surrounded by nine other bee yards having a total of 500 hives headed by "drone mothers".

Stocking Nucs with Bees

When restocking in the spring, we make a practice of not using brood to start the nucs. We use only small packages of bees which are placed on top of each nuc previously supplied with frames, feed and a queen cell. By the use of these "pallets" of bees, we eliminate one possible source of transferring brood disease.

Although a large number of queens are shipped with packages, a still larger number are shipped in mailing cages. To handle these efficiently, certain procedures must be followed. The use of the old fashioned tacks for screen on cages has given way to the use of staples; end gates and cardboard have given way to corks; string has given way to stronger and easier-to-use filament tape.

One of our latest innovations is the use of a two-way radio system to relay incoming orders to the field units for immediate filling. This is especially useful when customers want fast ser-

Worker places super on new funnel and shakes bees into catching "can".

Light, all-screen shipping cages save on express and provide maximum ventilation.

vice on "rush order" queens. This sometimes saves a day or two in the time taken to fill an order. Queen yards are miles from the office and a special trip is prohibitive.

Whole Super Shaken into Large Funnel

Bee shipping is the main source of our income, for we gross more from packages than from any other single item. In the past two years we have revamped our packing methods considerably. The outmoded single frame funnel has given way to a completely new idea in packaging. Bees are now caught by the "whole super method". Our funnel is now large enough to fit under a whole super of frames. We shake all 10 frames without removing a frame from the super. Previously, every frame was taken from the super and shaken in a smaller funnel a few feet away. At the bottom of the new funnel we have a gate in the neck to stop the flow of bees in much the same way as water is turned on and off. Furthermore, this gate is constructed so as not to kill any bees when closing.

Under the funnel is a platform upon which a can of proper size is placed to collect the bees from the funnel. We have carefully determined the proper volume that these cans should hold so as to give us 2½, 3⅞, or 4⅛ pounds of bees. (This half pound plus of overweight in **each** package amounts to from 2,000 to 2,500 extra pounds of bees given free with our packages each year.)

Instead of weighing each can as was previously done for each package, we now use the right size can for the size package we want to fill. No longer does the worker have to walk 10 or 12 yards to the forgotten scale and then come back to add more bees to the can or just dump it in the package if it is the correct weight. Also, the customer benefits by obtaining a uniform lot of packages that have been handled faster and better by using these new methods.

By strapping our cages at home previous to catching bees, we have decreased the time that the filled packages are left in the outyard. This step minimizes possible exposure to sun or rain thus insuring a better handled shipment. All-screen cages provide more ventilation which is necessary during hot weather shipments. We have rejected the "wooden end" cages not only because they do not provide maximum ventilation, but also because they weigh more and thereby cost more to ship by express or parcel post.

Before bees are caught for shipment, inspectors working as a four man team examine **every** frame of brood in every hive that we ship from. This rigid inspection assures us of a disease free stock.

Tractor Cuts Grass in Outyards

Our outyards are so arranged that a minimum of time is required for their upkeep. We use our tractor to cut grass around the hives in the fall. We do not use grass poison in some locations. . . . especially the larger ones. It simply takes too much poison to kill the grass. Besides, this grass sometimes produces badly needed pollen in the summer. We prefer to let it grow and cut it once or twice a year with a tractor. Our 28 locations cover an area of approximately 330 square miles. In each location we maintain from 75 to 100 colonies. In years past we kept all locations at 130 hives and did just as well. Now farming has decreased the amount of unused land and swampland has been drained.

We have recently renovated our office and purchased new equipment such as addressograph and graphotype machines. This equipment is used to prepare and store away for future use a large file of customers' names and addresses. Each name and address, stamped on a metal plate, placed in a holder and kept in a special cabinet, becomes a fire-proof permanent record of a customer's name and purchases. When an order is to be shipped to a customer and labels must be printed, we take this plate and print the desired quantity of labels needed. An operation that previously took 15 minutes for each different customer now takes approximately two minutes. There is no chance of a mistake being made in an address once the original plate is correctly made. This may possibly save part of a shipment from traveling to the wrong destination.

Sugar Cane Replaces Goldenrod

Not everything runs smoothly in a business such as this. Problems like farming, pests and high costs of materials and labor tend to balance the scale of profit and add weight to the debit column. Farmers have cleared off land once left to woods and swamp. Where once there were flourishing fields of goldenrod, there are now neatly plowed rows of grass-free sugar cane fields. The flowers that formerly grew in the little space on ditch banks and levees have been poisoned or cut.

Ants, which have always been a problem in the past, have now begun to lose ground to Cloredane and Deldrin. Dragonflies still take their toll in a queen yard. Wax moths are still prevalent, but will soon go the way of ants.

The future looks bright. We have plans for an expansion program to cover stepped up sales of retail honey, more locations for more colonies to enable us to take more orders that are usually turned down. We plan this program with efficiency as our keyword, as well as in service to our customers.

How To Stay Young

MR. C. W. BROWN of Monticello, Illinois, stands beside his sixteen hives of bees. Mr. Brown has kept bees for 45 years. He eats honey each morning and enjoys good health—even though he is beyond the fourscore and ten mark.

Mr. R. Hamilton and his truck used to haul package bees. Note front ventilator on van.

Trucking Packages From South To North

ROBERT HAMILTON
Aylsham, Sask., Canada

Due to heavy losses when bees are shipped by rail more and more packages are being trucked north each year. Here is a man who can tell you how to get them there in good shape.

THE TRUCKING of package bees from the South to points in the Northern States and Canada is now an annual occurrence which started mainly because of heavy shipping losses when bees were shipped by rail. Overheating was probably the main cause of loss, aided by a lack of knowledge on the part of the railway employees as to bee care in transit.

It took several years to teach the bee trucker the best techniques of care plus the proper type of equipment to use for the safe transport of bees under all weather conditions. In the past 12 years we have run up against extremes of weather enroute which have included a blizzard with near zero degree temperatures to heat of 96 degrees in the shade. Therefore you will recognize that the van must be flexible enough to take care of these extremes.

This brings us to equipment and it can't be too good. The truck and tires must be in first class condition as a breakdown or delay on the road can be disastrous if it occurs during the heat of the day. Without any mechanical means of ventilation the bees would quickly overheat in a stationary truck under these conditions.

Construction of Van

The van is built on the truck flat using light plywood. The front and back ends have holes covered with sliding or hinged doors which can be opened as required for ventilation. The front end must also have an inner wall a few inches from the outer front one, that is of slatted construction. This inner slatted wall acts as a baffle to the inrushing air when the ventilators are open. This type of van is cheap to construct costing from 50 to 70 dollars for materials.

If it is intended to travel all night the truck should be equipped with an extra fuel tank. This will insure you against running out of fuel when an open service station may be difficult to locate.

The truck most commonly used is perhaps the two-ton, with a 14 foot flat. This will handle eight to nine hundred packages. The 16 foot flat will take one thousand packages but the capacity is limited by the wheel base, as a load of bees is more bulky than heavy. A two-ton truck with a short wheelbase can take only a 12 or 14 foot flat.

Two thermometers are placed at two different levels near the center of the load. These are read by opening the back doors and using a flashlight. It is much better to use a remote control thermometer with the unit near the center of the load and the dial in the truck cab. This does away with stopping to read temperatures, as changes in temperatures can be noted at once without leaving the cab.

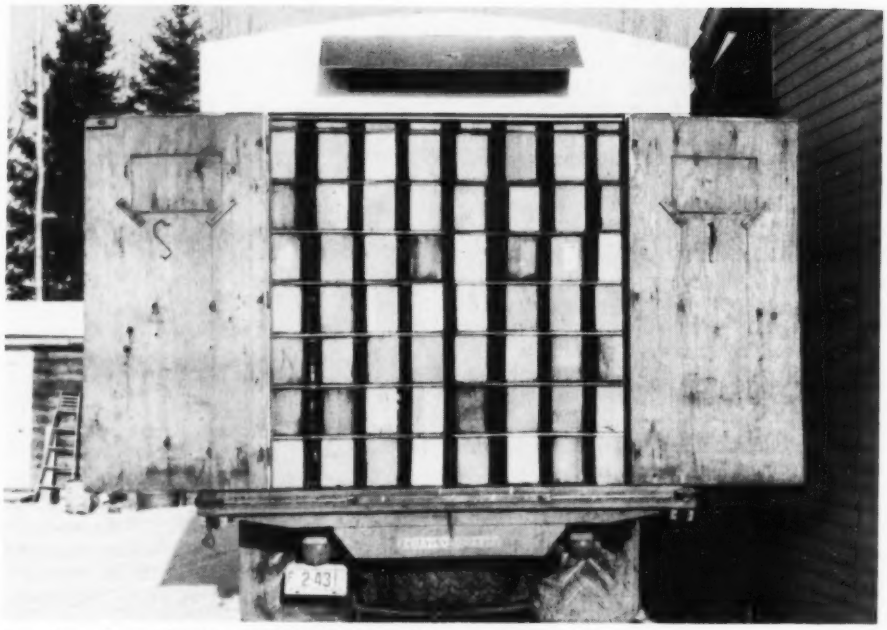
Bees Must be Kept Quiet

We like to keep the bees at 60 to 70°F. and if they are kept dark they will stay clustered and quiet. The ventilators should be constructed in such a manner as to admit plenty of air, when required, without light. We also paint the inside of our van black to cut down on light reflection. Bees will remain quiet at fairly high temperatures if kept dark, but they must be watched carefully and cooled down if they commence running.

We took a load of bees across the Nevada desert, one spring, in a temperature of 96 degrees in the shade and brought them through in good condition, but not without a lot of work on our part. When the temperature went up in the 90's we pulled into a service station and borrowed their water hose and sprinkled over and between the rows of cages, wetting them thoroughly without putting much water on the bees. We then drove off and the temperature in the van dropped to the 70's. The bees stopped running and remained that way until the moisture evaporated, which was about half an hour later or 25 miles. As soon as the temperature started climbing again we'd look for another service station and repeat the process. This continued all day but with darkness the temperature dropped and our troubles were over. Without the water we would have lost the bees at these high temperatures so it is important to know what to do in an emergency of this kind.

Good Ventilation Necessary

It is a good thing to remember that the larger the load the more efficient must be the ventilating system, as a large load of bees that has warmed up and started to run is like a furnace. I have seen them raise the temperature



Rear view of van showing packages in place. (Note ventilators.)

in a van to 120°F. while the truck was stopped for a few minutes taking on gas.

On another trip we travelled all one night in zero degree temperature. The necessity of having a van which can be closed up fairly tight against cool weather is important, otherwise some chilling may result.

I think the worst weather condition in trucking bees is a hot day with a following (tail) wind of 20 or 30 miles per hour. This cuts down the ventilation in the van so that it is very difficult to keep the temperature within safe limits. If conditions get too bad the truck should be turned around and driven against the wind at intervals during the heat of the day. This together with sprays of water should keep the temperature within safe limits until evening, at which time wind usually diminishes.

In planning the trip, if you have a choice of routes, pick the one least likely to have high temperatures.

Two Drivers Necessary

An assistant to spell off with the driving is essential and the trip should not be attempted without one unless the distance is short.

The distance one has to travel will determine how much sleep you would require on the return trip with the bees. Some people can sleep in the cab while the truck is traveling, many cannot do so. Here is how we handled the situation. Our trip is 1800 miles and we leave Redding, California with our load at six P.M. and travel all night. The following day we cross the Canadian border at four P.M. and stop at Cranbrook, British Columbia for the night. We sleep until four A.M. rising then very much refreshed and prepared for the balance of the trip which gets us back home around midnight. The entire trip takes us from 54 to 56 hours from Redding, and is not too strenuous so we arrive home in fairly good condition.

Loss of syrup from the feed cans is sometimes heavy if the roads are rough. This can be cut down if tire pressure is reduced a little, or if the shipper uses a heavier mixture of sugar.

If you live on the Canadian side of the border it is advisable to find out what hours the port is open. Smaller ports-of-entry are only open from eight A.M. until six P.M. Also, arrange with a broker to clear your bees when you return, to save delay.

Most states and provinces impose load limits on the highways during the spring breakup so it is important to become familiar with those regulations.

Most years with normal April weather the trip is most enjoyable and we now look forward to it. With the constant improvement in roads each year the trip becomes easier. Perhaps we have been lucky but we have never failed to bring the bees through in good shape. Every year brings some new experience to add to our knowledge of trucking bees from the South.

Have you ever found a swarm 50 feet high in a big tree and had to let it go because you couldn't reach it? Well next time try.....

Shooting them Down

CLOSSON SCOTT
Pendleton, Oregon

SEVERAL YEARS ago I had a partner in my beekeeping. We were anxious to increase the number of our colonies (this was during the sugar shortage during the last year of World War II) and so we were very reluctant to lose any of our bees. Due to a little mismanagement on our part, one day a fine large swarm emerged and as usual circled around in the air for a time while we frantically ran around below, hoping it would settle instead of taking off into the "wild blue yonder".

Well, that swarm very obligingly settled, but where would you suppose? Away out on the end of a slender branch, in a walnut tree about 50 to 60 feet in the air. We couldn't get anywhere near them. We didn't want to lose them. An idea struck me. My partner was quite a hunter and a good marksman, which I am not. I asked him if he could shoot that slender branch off. He thought he could and went for his 22 caliber rifle.

The first shot missed. The next broke the branch but it hung by a strip of bark. Two or three shots later branch and swarm fell and caught in the lower branches. After a short time the bees had all clustered together again and we were able with the help of a ladder to reach them and get them into a hive.

While I do not carry a rifle as part of my bee equipment, there may be times when a rifle can be used to help hive a swarm of bees.

Installation of Package Bees and their early Management

"I would rather have cold weather for installing the bees because the queen loss and drifting is less in cold weather."

HENRY W. HANSEN
Dakota City, Iowa

THIS IS SUPPOSED to be an article on how I install package bees, so we will begin by assuming that the package bees have arrived and are sitting out in back of the honey house on the truck.

Last fall we made up our brood nests ready to receive the bees. In the brood nest we have a feeder, two combs of honey, two combs of pollen, one of each on both sides, and four empty dark brood combs in the middle.

While we were South getting the bees, the boys have put the brood nests out in the yards, with all flight holes plugged.

When we arrive with the first load, which is as soon after the first of April as possible, the weather is usually cold and disagreeable. When we arrive two weeks later with the second load it is sometimes warm and the bees must be handled differently.

Keeping Bees Warm if Weather is Cold

When the weather is cold the bees must be kept warm and are unloaded from the truck and immediately placed in the heated honey house. We keep the temperature about 75°F. until the bees warm up good and start buzzing. The bees break cluster and start to feed.

After the bees are thoroughly warmed up, the crating strips are removed from the packages, and the individual cages are stacked closely together on top of a large canvas in the truck. We take as many in the truck as we can install in half a day. They are covered completely by bringing up the edges of the canvas on the floor of the truck, covering the sides and top of the shipping cages. If this canvas isn't large enough to completely cover the bees another canvas is put over the top so

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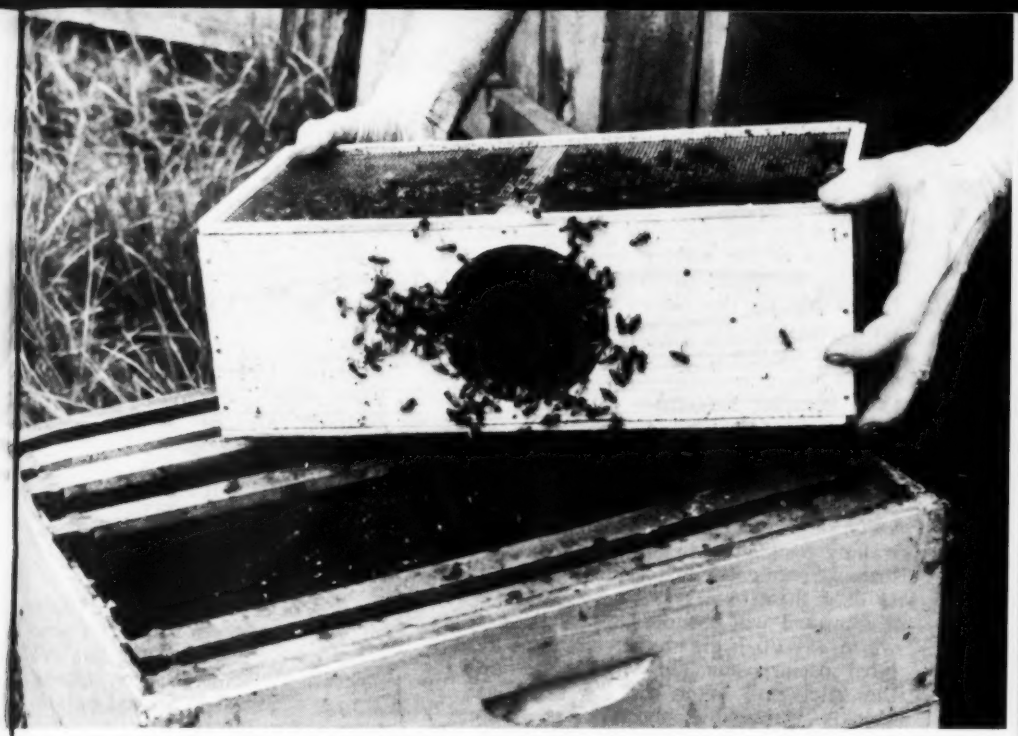


The cage is turned upside down and the bees shaken out onto the bottom board.

they are tightly covered and no cold air gets to the bees.

When we get out to the yards, the bees are still warm. Extreme care must be used in cold weather not to break the cluster.

After we arrive in the bee yard, we take the lids off each brood nest, remove the feeder and the four empty combs in the center. When all the brood nests have been readied in this manner, the canvas is lifted from the packages in the truck, and we take one or two packages at a time from under the canvas and set them in the hive in the space left empty by the four removed frames. The lid is quickly replaced on the hive, so that the bees have a chance to warm up the hive. When all the brood nests in the yard have received a package, we go back to the starting point and begin installing.

Installing Packages

The package is removed from the brood nest and the wood cover over the feeder can quickly removed. We shake the bees to the bottom of the shipping cage and quickly remove the feed can and the queen cage, immediately re-covering the hole left by the feeder can so no bees can escape. A quick look is taken at the queen to be sure she is alive, and the queen cage placed upside down on the top of the frames remaining in the hive. Holding the loose cover over the hole, the bees are again shaken down to the bottom of the shipping cage and then the cover is removed, the cage turned upside down and the bees shaken through the hole onto the bottom board. Sometimes we get a bunch of bees right in the middle of the bottom board, and if the combs are put right on top of this pile, some of the bees will be smashed. So the hive tool is used to spread the bees around on the bottom board. The feeder and combs are replaced and we are ready to release the queen.

If the queen is clipped, and I would recommend that all queens be clipped, we tear the screen off her cage and release the queen, watching to see that she goes down between the frames before replacing the lid. If the queen is not clipped, a hole is poked through the candy with a nail or small stick, and the queen cage placed in between the frames, with the candy end down. And the job is done.

We leave the hives completely closed up until evening when it is dark. We find the bees will come out in the morning better organized and able to mark their locations.

In the last few years we have painted the front of the bottom board yellow, or blue, or black, or grass green, and by mixing up the colors when setting the brood nests in the yard have avoided most of the natural drifting of the bees.

Cool Weather Preferable for Installing

I would rather have cold weather for installing the bees because the queen loss and drifting is less in cold weather. Fifty degrees is ideal weather for installing packages. Below that temperature extreme care must be used to avoid chilling them.

Now we will assume the weather is warm, say 60°F. or above, and the bees have just arrived. They will be hot on the truck and taken off the truck as quickly as possible, spread out in the honey house, about five crates on top of one another about four or five feet apart. If they have broken cluster, which they most likely will have, we get our electric fans out and turn them on. Then we get our water hose and water them down good. Use a very fine mist spray and cool the bees as quickly as possible.

I would like to emphasize that water is what the bees need, not sugar. They have had sugar syrup in the feeder cans on the way up from the South, and what they need is water so they can keep cool. As all beekeepers know, the bees cool the hive by evaporating water.

Now after the bees have been cooled down, we are ready to take them out to the yard. This time we do not remove the crating strips of wood but load them on the truck, uncovered, and take some containers of water with us and a sprinkling can, the garden variety of sprinkler.

Installing in Warm Weather

When we get to the yard, the shipping strips of wood are removed and a package placed in front of each brood nest. Just before installing each package we shake the bees down to the bottom of the shipping cage and sprinkle them with water, enought to keep them down while we take the feeder can and the queen out, and dump the bees in the bottom of the hive. The queen is installed as in cold weather and the lid quickly placed on the hive.

It is always necessary to work fast when installing package bees regardless of the weather. When it is cool, there is the danger of chilling them, and when it is warm, we don't want to get them in the air.

After the bees are installed we pick up the empty shipping cages, feeder cans, wood strips, etc. This promotes good relations with the farmer, keeps the bee yard neat and in addition avoids the threat of stepping on a nail and getting an infection. If a queen cage is left in the yard, it will attract all the strays and you might have as much as one pound of bees cluster around it and die.

After the package bees have been installed we leave them alone for one week. Then we check for queens. We don't necessarily look for the queen, but if we see eggs laid in a good pattern we assume the queen is there.

Feeding Necessary

At the time of this first inspection we fill up our feeder, which holds about three quarts, with either honey or sugar syrup, preferably honey. We haven't

Filling the division board feeder.

fed sugar for a good many years. We use our capping honey for feed and mix in the recommended dosage of sulfa, which in our case is three ounces to 150 gallons of feed. The honey is diluted with one-fourth water by measure.

We give the bees this feeding for two different reasons. One reason is to get the sulfa into the bees for prevention of AFB and the other is to give the queen a boost.

After the bees have been installed four weeks we go back and equalize the brood. We will generally have from three to five frames of brood in the hive, so we try to make all of them four. Sometime we have a few frames of brood left over, and if there is an empty hive in the yard, which there quite often is, we make up an extra colony by giving the extra frames of brood a queen.

Between the time of equalizing the brood and the main flow we go through them, checking for supersedure and replacing queens when needed. We always keep queens on hand because when constantly working with the bees we find need for additional queens due to supersedure, queen failure, etc.

The worst mistake made by most package beekeepers is to put supers on too early. A good yardstick is that if the majority of the colonies in the yards have enough bees so that the bees are clustering in the feeder, then it is time to put on the first super, and not until then.

This is one beekeeping practice which differs greatly from the care of wintered colonies. Package bees require crowding to conserve warmth, whereas wintered bees require room to prevent swarming.

The entrance reducer should not be removed until the flow starts, and after that, supers should be added to the colonies as needed.

Winter Scene

WM. M. JACOBSON
Kaukauna, Wisconsin

LAST WINTER in Wisconsin, we had a great deal more snow than we had had for many a moon. In fact we had so much that we did not want to see any more. The enclosed winter scene was taken before we had the last severe storm. These hives are all three high and as you can see, only a few show the top super, and the rest only the covers. After the last storm they were completely covered. The snow on the average was five feet deep.

Have you ever wondered what effect mosquito repellent would have on honey bees and whether or not it would afford protection against their stings? Then read this article by Lt. Wilson.

The Effect Of A New Insect Repellent On Honeybees

LT. WILLIAM T. WILSON
Medical Entomologist
3922nd USAF Hospital (SAC)

Introduction. A new insect repellent, N,N-diethyl toluamide (OFF*) has proven to be very successful in warding off the attacks of blood-seeking mosquitoes. Tests were performed to determine the effect of the chemical on honeybees, since it would be very convenient to have a lotion that would repel the attacks of bees on exposed parts of the body, especially hands and ankles.

Laboratory Experiment. Heavy cardboard tubes were constructed that measured approximately 5 x 5 x 48 inches with a clear cellophane window cover over one end (See Figure 1). Caps were made to cover both ends of each tube while the test chambers were being loaded with ten honeybees. The bees are introduced into two darkened tubes simultaneously at the end opposite the covered cellophane window. One of the windows was untreated (control) while the other had a coating of 50 per cent N,N-diethyl toluamide. The darkening covers were removed and both windows exposed to a 150 watt electrical light bulb at a distance of 18 inches. The bees were then timed to determine how rapidly they were attracted to the light. Bees are phototropic and fly towards light. In the experiment the author wanted to find out if the repellency of the chemical was stronger than their attraction to light. The bees reacted in an unexpected manner; they flew towards the window that had the chemical treatment two and three times faster than in the untreated tube. The bees appeared to be extremely excited and seemed to be infuriated when they hit against the treated cellophane window. The experiment was repeated several times, each time producing the same results. Apparently, the N,N-diethyl toluamide caused irritation and the bees flew at the windows either vengefully or in a disorientated attempt to avoid the fumes by flying towards the light.

* Reference to a commercial trade name (OFF) does not necessarily constitute an endorsement of the product nor does the failure to mention similar products constitute a criticism.

DIAGRAM OF TEST APPARATUS

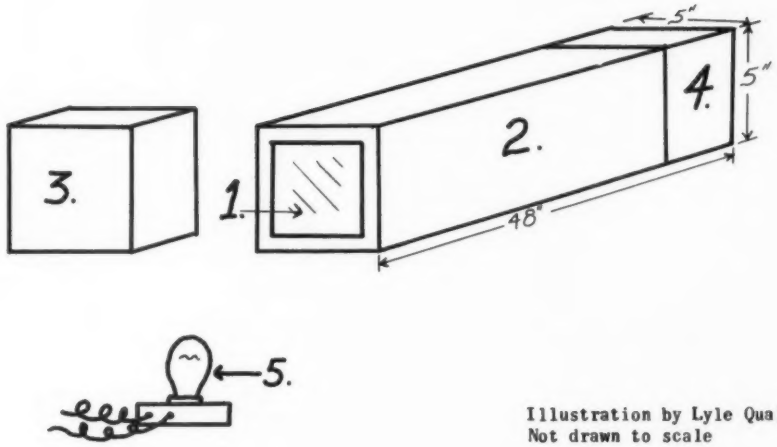


Illustration by Lyle Qualley
Not drawn to scale

1. Cellophane window.
2. Heavy cardboard tube.
3. Cover used for darkening tube while bees are being placed in opposite end.
4. Removable cover for introducing bees into tube.
5. Light source (150 watt).

Field Results. On a warm January (1959) afternoon in central Florida, tests were run to discover how the bees would react to N,N-diethyl toluamide in the apiary. The right hand of the author was treated with liquid repellent by an assistant while the left hand remained untreated. There were no apparent nectar sources in the vicinity although the bees were flying. Four strong colonies were opened and worked rather cautiously at first, but after a few minutes the frames and hives were purposely jarred to excite the occupants. During a 30 minute period, the treated hand was stung once and the right ankle three times.

Next, five strips one inch in length were painted at random on the topbars of four colonies. Prior to treatment, bees covered the topbars completely, but after treatment the one inch strips remained untouched. Whenever a bee would venture onto the treated area, it would quickly withdraw and usually preen its antenna. The bees stayed away from the strips for over 30 minutes at which time the colonies were closed.

Summary. N,N-diethyl toluamide demonstrated no repellent action in the cases where the bees were confined to the testing tubes or stung the chemically treated hand of the author. The high concentration of fumes in the tubes upset the sensory system to such an extent that the bees attempted to attack the source of irritation in a very disorientated manner. Concerning the stinging of the treated hand, the attack by the bee was rapid and the stinger injected before the bee reacted to the chemical.

"OFF" showed its effective repellency when the honeybees avoided contact with treated areas on the topbars. Apparently when they come in contact with the compound, strong irritation is experienced, but unlike contact insecticides they do not die—only withdraw from the treated surface.

Mary Carolyn Barnes discusses her bee demonstration with 4-H Clubers, Joe and William McLees and W. A. Stephen, Extension Beekeeper from the North Carolina Agriculture Extension Service.

My Beekeeping Demonstration Took Me To Detroit

Mary Carolyn won the North Carolina's 1959 4-H Club award with her demonstration on beekeeping. Her demonstration was based on actual experience with bees.

MARY CAROLYN BARNES
Winterville 4-H Club
Winterville, N. C.

I WAS NERVOUS, giving my beekeeping demonstration in competition for the first time, but somehow I won; first the district, then the state. As state winner I was awarded a trip to take part in the North Carolina State Beekeepers' summer meeting in Boone, over in the mountains.

In November 1959 I was invited to give my demonstration at the joint meetings of the Entomological Societies of America and Canada at Detroit. The trip was made possible by the Myers Craft Manufacturing Company, Burgaw, N. C., the F.C.X., and the Wyatt-Quarles Seed Company, Raleigh, North Carolina.

The winner of the Entomology Demonstration, David Washburn, and I represented North Carolina. At Detroit we were joined by 4-H'ers Chuck Hadden of Virginia and Ginger Jensen of Michigan. We didn't expect to be busy, but that wasn't the way it turned out at all.

To tell all our nice experiences would be nearly impossible. Some of the highlights are mentioned below.

Saturday, November 28, Mother, David and I, accompanied by Dr. H. E. Scott, Extension Entomologist, N. C. State College, left State College in Raleigh to pick up W. A. Stephen, Extension Beekeeper in Cary. We were on our way.

Sunday P.M., Detroit at last! After getting settled in our hotel, Mother, Mr. Stephen and I went to a church service. We were thrilled by the Messiah.

Monday A.M., down to work. A little perfecting to do on my demonstration. P.M., off to Cadillac School where Chuck and I gave our demonstrations. That night mother and I had the pleasure of staying with Ginger at the home of Mr. and Mrs. H. Martin. Their daughters Lucy and Helen are 4-H Club members. We enjoyed their hospitality for the rest of our time in Detroit.

Tuesday A.M., I felt a little more at home, giving my demonstration at the "Symposium on Apiculture" even though the name frightened me. P.M., back to school. David and I gave our demonstrations at the Holly School. Then at night to a Detroit 4-H Club meeting where Ginger and I were elected to give our demonstrations. Special recreation followed, so we got a chance to meet all the 4-H'ers.

Wednesday A.M., off again. Now to make a TV film including parts of our demonstrations and information about the Entomology meetings. P.M., Time for School. By this time we felt quite at home in the schools of Detroit; Chuck and I to the Hanson School. At night—only time for three demonstrations at the "Youth in Entomology" section. I was to give mine next A.M.

Thursday A.M., demonstration presented at the Extension Symposium—Extension leaders from all over the United States and Canada there. P.M., last stop. Another pair of demonstrations by David and me at another school. Then fond farewells as at six o'clock we North Carolinians left Detroit, homeward bound.

Friday P.M., after putting David on a plane at the Greensboro airport, we were back in Raleigh and felt we were home at last.

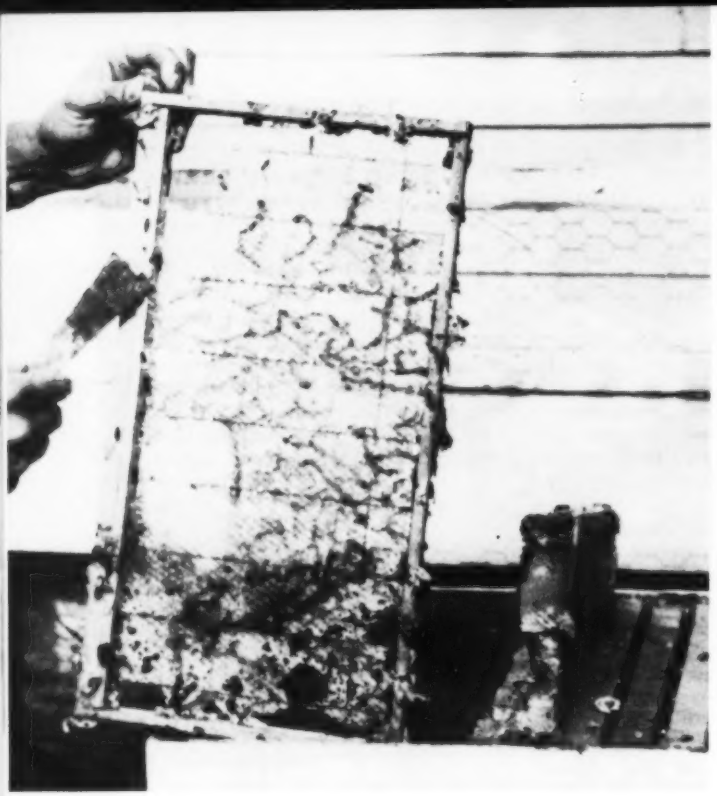
I really feel that I have learned and profited more from attending this meeting than I can say.

[It has been our privilege to meet Miss Barnes and to see her demonstration, which by the way, is based on actual experience with bees. This young lady is rendering a worthwhile service to our industry.—Ed.]

A Practial Idea

MILTON H. STRICKER
Stockton, N. J.

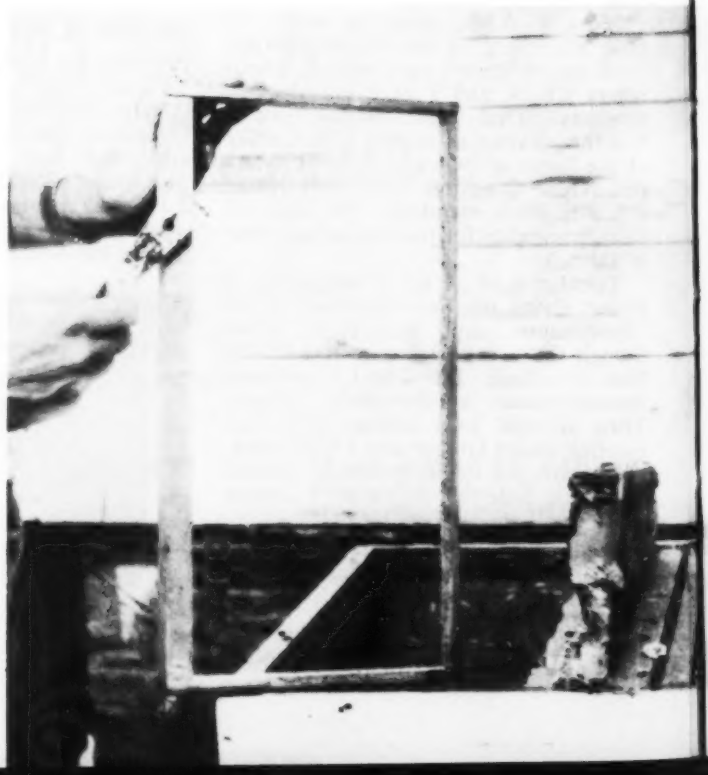
WHEN EXTRACTING honey in cold weather, the combs may be warmed with a light bulb in an empty super on the bottom of the pile. It may take a little experimentation on size of bulb, number of supers on the pile and length of time the heating is necessary.



One's first impression is to throw this frame away, however, dig in with a sharp hive tool. . . . .

Save

. . . . and before long it begins to look like it might be worth saving. Mice damage should be culled out or repaired.



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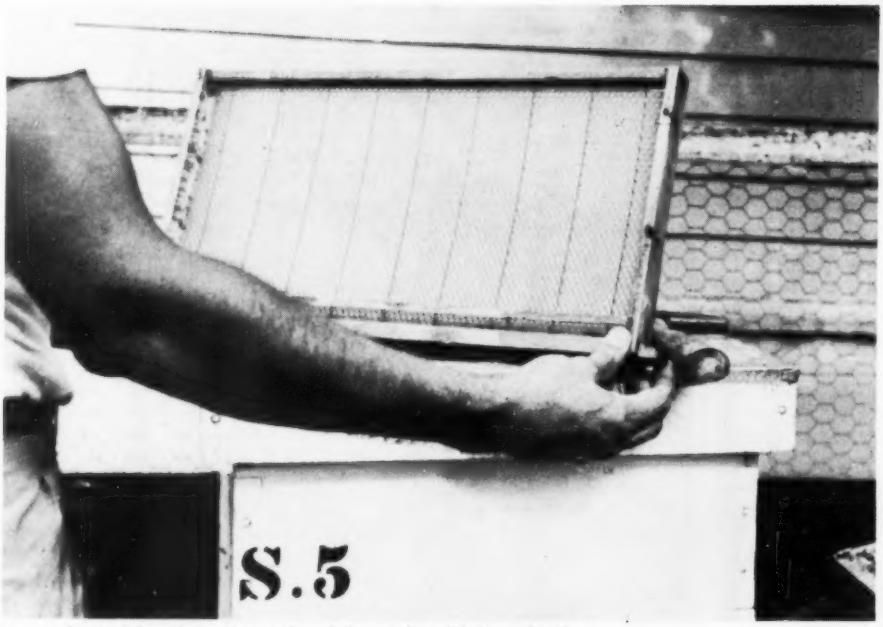
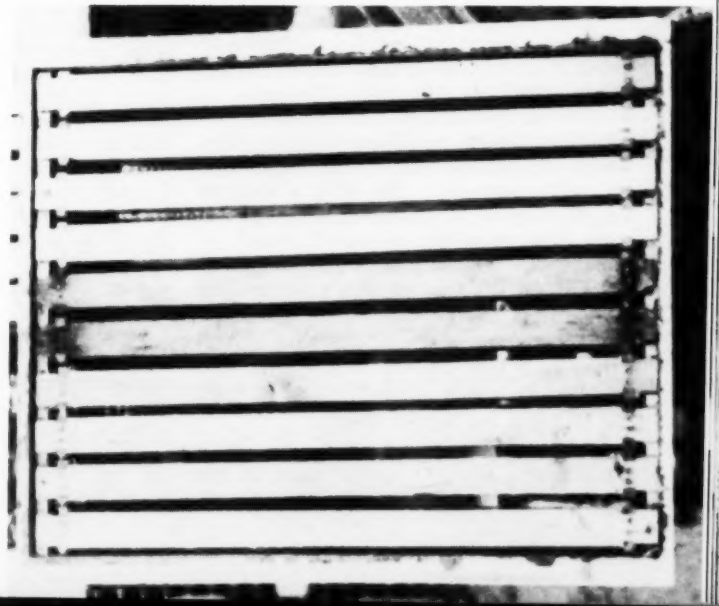


A new sheet of foundation inserted and the wedge tightly replaced. . . .

That Moth-eaten Equipment

Equipment that has been subjected to wax worm damage has the appearance of being worthless. A good sharp hive tool and a little elbow grease can put this equipment back in usable condition again. Be careful that the wax moth damage doesn't camouflage American foulbrood. Scraping won't clean out this disease.



. . . . and before long the hive body is ready for that new swarm.

Easter Breakfast of Honey

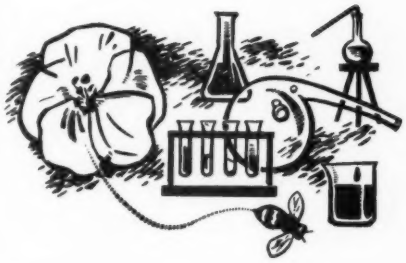
. . . . . *a rare privilege*

THE SEASON preceding Easter Sunday is indeed a most privileged one for all beekeepers. For it is a time of dedication of a humble Servant that was first rendered by an "Essene" or beekeeper and a Fisherman, to Jesus Christ on the day of His resurrection. The Bible in the Gospel of St. Luke, Chapter 24, verses 42-43 said, "And they gave him a piece of a broiled fish and of an honey comb." "And he took it and did eat before them."

Mr. A. C. Ullrich, P.O. Box 459, McHenry, Illinois, is chairman of the program committee of the Cook-DuPage Beekeepers' Association of Chicago. He has suggested that beekeepers furnish a token gift of comb or cut comb honey for table use at the Easter Morning church breakfast. This is to be done in remembrance of an earlier "Essene" who had the rare privilege of directly serving a portion of Christ's food on His Risen Day.

The Cook-DuPage Beekeepers' Association have prepared several printed pieces illustrated to aid this pilgrimage. One of these is illustrated above.

It seems fitting that honey be a part of the religious symbolism connected with Eastertime.



Research Review

DR. ROGER A. MORSE
Research Editor of Gleanings and Ass't. Prof. of Apiculture
Cornell University, Ithaca, N. Y.

Recovering More Bird's-foot Trefoil Seed:

ONE OF THE problems of harvesting seed from bird's-foot trefoil is that the seed pods shatter easily and seed is lost. Bird's-foot trefoil is becoming an increasingly important nectar and pollen plant in the northeast and beekeepers hope its use will increase. Methods of recovering more seed would help in this regard.

The usual method of harvesting is to cut and windrow the plants in one operation. The windrows then dry for 24 hours and are combined. Engineers with the USDA have experimented with windrowing on wide sheets of plastic. Rolls of plastic are carried on the mowing-windrowing machine and picked up later by the combine so that they can be used again.

It is reported that there is a 35 per cent reduction in seed loss using this method. No mention is made however, of the cost of the plastic or about the cost of putting it in place and picking it up. The article also states that losses could be reduced by curing in loose bales or shocks placed on plastic and by combining after the pods have dried.

Better ways to handle seed. Agricultural Research 8:8. 1960.

Purification of Queen Substance:

ANOTHER ADVANCE in determining the composition of queen substance and its function in the hive has been published from England. By extracting the heads of queen bees the authors have obtained waxy crystals which melt between 45-50°C. When these crystals were fed to small groups of bees the bees did not build queen cells which they would have done normally.

Preliminary analysis of the material indicates that it is closely related to 10-hydroxy-Δ^2-decenoic acid which has recently been found in royal jelly. This in itself is a very interesting fact. Chemical compounds which are only slightly different in structure frequently cause markedly different biological reactions. It is reasonable too that the compounds should be somewhat similar since both of them are produced in the glands of the worker and the queen.

Because of the immediate value of research on this subject many laboratories both in this country and abroad are very actively investigating the properties of queen substance. No doubt many persons are anxiously awaiting the coming of spring to test new ideas and new materials in the field. This fall should bring some notable advances.

Butler, C. G., R. K. Callow, and Norah C. Johnston Extraction and purification of "queen substance" from queen bee. Nature 184:1871. 1959.

Notes on Bee Poisoning:

THE CIRCULAR listed below will be of value to those in areas where insecticides are used in quantity. A rather complete table lists the toxicity of 66 materials or combinations of materials to honeybees. Some questions about repellents and minimizing poisoning are also answered.

Johansen, Carl
Bee Poisoning, A Hazard of Applying Agricultural Chemicals. Washington Agricultural Experiment Station. Pullman Station Circular 356. Revised January 1960.

Distribution of Destructful Insects:

A BROCHURE containing maps showing the distribution of many of the more destructful insect pests has just been issued by the Plant Pest Control

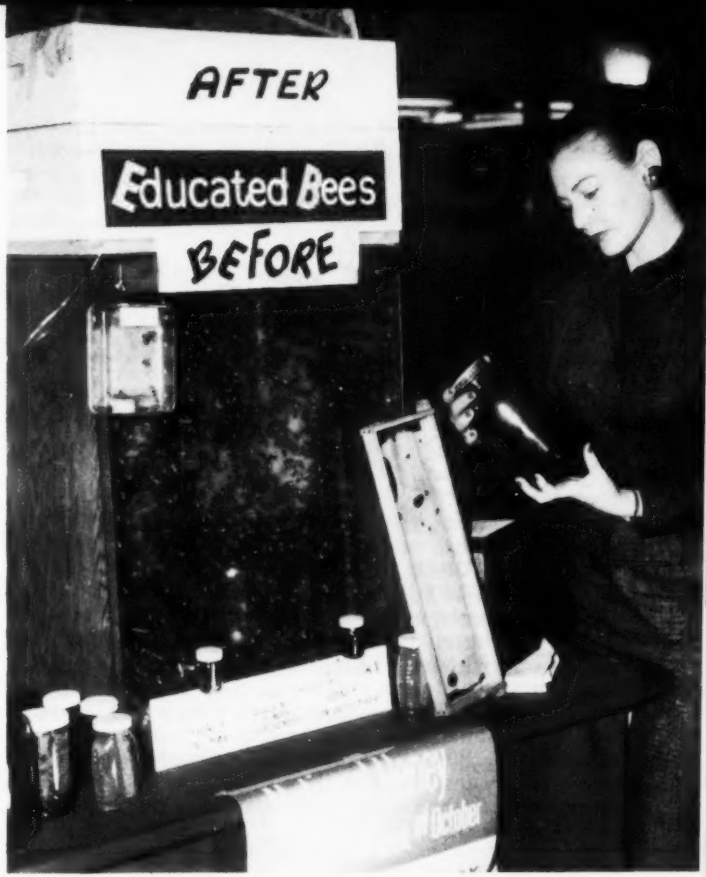
(Continued on page 188)

NEWS REEL

Arizona Secretary of State, Wesley D. Bolin, crowns Monicca McNutt the 1960 American Honey Queen, at the Federation banquet as Kay Seidelman, the 1959 American Honey Queen watches. Monicca is also the Tennessee Honey Queen and hails from Nashville.

Delicious clover honey in attractive ceramic containers packed by Honey Acres, Menomonee Falls, Wis.

Miss White examines a jar of honey at a live bee display exhibited in the lobby of the Alamo National Bank of San Antonio, by Harvey Bevers, during National Honey Week. The observation hive is composed of a colony of bees that had built their hive from a mesquite limb. The bees, comb, and mesquite limb were placed in a glass hive of standard dimensions and allowed to continue to work. Supers were set on top of the observation hive and the bees filled them.



An observation hive falls at the 1959 U. S. Honey Exhibit, Anuga, Cologne, Germany.

Editorials

Our Importance as Beekeepers

IT IS DOUBTFUL if we as beekeepers realize our importance to agriculture. The beekeeper with a few colonies in the suburb of a town or city may not realize how beneficial his bees are in pollinating fruit and vegetable crops in that vicinity. Neighbors with gardens and small orchards may not realize how important honeybees are for pollinating their crops. If town and city dwellers realized the importance of bees as pollinators, they would not be so ready to oust bees from within city limits, as is the case in some instances, about which we read in papers occasionally. Since honeybees are responsible for over 80 per cent of the pollination done by insects, then they should be respected by the rank and file of our citizenry more than is the case today. See the article on fruit pollination, on page 167 of this issue.

The Flight of Drones

IT PERHAPS CAN BE SAID that less authentic information is available on drone bees than there is on queen bees and worker bees. It seems to be the general consensus that drones are not of much importance, excess baggage, so to speak and most beekeepers are out to destroy or get rid of all the drones possible during the active bee season. In a populous colony, where drones are unusually abundant they apparently do consume a considerable amount of honey and thus reduce; to some extent at least, the amount of surplus honey harvested.

Some beekeepers seem to be of the opinion that colonies with a large drone population put up more surplus honey than colonies with a lesser amount of drones. This might be somewhat difficult to prove. Is it possible that the presence of drones in the colony has a beneficial effect on the workers, causing them to do their very best work?

Queen breeders realize the importance of an ample number of drones for producing desirable strains of bees. It is necessary for queen breeders to have their queen mating yards surrounded by colonies headed with good queen mothers to produce drones necessary for mating with virgin queens.

Queen breeders are or should be interested in the flight of drones and in this connection we refer to an article entitled, "Observations on the Flight of Drone Honeybees", by Dr. E. Oertel, Entomology Research Branch, Agricultural Research Service, U.S.D.A. The following is a summary of Dr. Oertel's paper on this subject:

"Observations on the flight of drone honeybees (Apis mellifera L.) were made at Baton Rouge, Louisiana, in 1952-54. Usually the maximum number of flights was made between 2 and 3 p.m. An occasional drone was seen to fly before noon or after 4:30 p.m. A drone is likely to take more than one flight on favorable days. The flying speed of the first drone to return in each test lot ranged from 5.7 to 10 m.p.h.

"The greater the distance from the hive that drones were released the fewer returned. None of those released two and one-half miles from the hive returned to it. Nearly as many of the drones that were forced to fly in the forenoon were able to return as those released in the afternoon. Apparently the position of the sun is not essential as a guide. A temperature of about 60°F. probably is too low for drone flight.

"Drones that had not flown averaged 220 mg. in weight, while those that returned to the hive from a flight weighed 185 mg. Drones caged as they returned from flight took 11.4 mg. of honey each during the first hour as compared with 6 mg. taken by those captured from a comb within the hive. The rate of food intake decreased with the time spent in the cage.

"The removal of both or one or part of the antennae did not prevent the return of drones to the hive."

Maybe it Will Rain

LIKE THE RUMBLING of distant thunder there is an unrest among the honey producers of our nation. It can be noticed by the different articles appearing every now and then in the bee journals and by the remarks made at association meetings. The unrest is due to the low margin of profit received by the producers for their honey. They are realizing that in order to get a just profit there must be a greater demand created for their product.

The rumbling is being caused by the producers who feel that the solution lies in a national advertising program. Dr. Jarvis's book "Folk Medicine" and the way it has affected the sales of honey across the nation could be a good example in their favor.

If this unrest continues and enough producers rumble, the storm may break and something big and bright could come of it.

Honey and Beeswax Production for 1959

ACCORDING TO THE annual summary put out by the U. S. Department of Agriculture Marketing Service, honey production in the United States for 1959 totaled 247,523,000 pounds which is seven per cent less than the 1958 crop. However, this is three per cent more than the 1953-1957 average production. The 1959 crop was produced by 5,438,000 colonies. The number of colonies in 1958 was 5,420,000.

Beekeepers reported approximately 63,000,000 pounds of honey on hand during mid December of 1959 compared with 73,000,000 for the same month in 1958. The average yield per colony for 1959 was 45.5 pounds, compared with 49. pounds in 1958 and the five year average of 42.7. The production of beeswax in 1959 totaled 4,417,000 pounds which is eight per cent less than in 1958 but four per cent more than the 1953-1957 average.

The 10 leading honey states in 1959 were Minnesota, Wisconsin, Iowa, Florida, Texas, California, Ohio, Michigan, Indiana and New York and these states accounted for 58 per cent of the United States crop. The state with the highest per colony average for 1959 was Minnesota with 110 pounds.

If there had been a normal crop of honey in California, with its over one-half million colonies the national crop for 1959 might have been the largest on record.

According to the record, beekeepers received an average of 17 cents per pound for 1959 sales which is slightly less than 17.4 cents in 1958. All extracted honey in wholesale lots averaged 13.7 cents per pound in 1959 compared with 13.6 cents in 1958.

In some areas stocks are quite well cleaned up and it is possible there may not be enough honey to supply the demand, before the new crop comes on the market. This applies particularly to the clover regions where the 1960 crop is not extracted until late July or early August.

Live and Learn

PROPOLIS PETE

EVERY YEAR along around the middle of March, at least one prospective beekeeper comes to me with stars in his or her eyes, and announces that they are going to get themselves a colony of bees. The question uppermost in their minds generally is, what is the first thing to do about it. My reply invariably is that they should buy a book.

Now, if you have been a reader of this page for any length of time you will remember that I poke fun at the books quite frequently. But that does not mean that I don't respect them. As a matter of fact, that is how I learned how to keep bees. There wasn't a beekeeper around here at the time, and, since I lived in the city, I didn't know anybody there that could help me out. So I bought a book.

When the bug first bit me, I went to the public library and borrowed everything that I could find. It didn't take me very long to come to the decision that I wouldn't get much help that way. The newest book available had been published 30 or 40 years before then, and it didn't take much in the way of brains to figure out that there were better ways of doing things. The trick was to find out how. It never occurred to me to write to one of the agricultural schools, but I did think to look in the catalogs of the big mail order houses. Behold, not only did they have a book, but they sold bee supplies too. The book was only a 49¢ pamphlet, and for the life of me I can't remember its name, but it really was good, and gave the fundamentals of beekeeping without the fancy frills. Soon after that I heard of a bee club, and learned about the regular bee supply houses. From then on, I was all set. So, when people come to me and ask how to get started, I tell them to buy a book. The best book for beginners is "Starting Right with Bees".

Everything is so confusing when you start from scratch. The idea of having a hive or two is fascinating. Your knowledge stems from the romantic literature—"How doth the busy bee improve each shining hour?" etc. etc. etc. When you find that there is more to it than putting a mamma bee and a papa bee in a box, and turning the spigot to get some honey in any month of the year, either you give up or you really get the fever.

One of the first things that you are going to learn after you get started, is that the bees have not read the same book that you are reading. This is disconcerting, to say the least, and you reach another point of decision. Should you, or should you not, go on? It may help some, to make up your mind, if you stop to consider why bees don't do what they are supposed to do. It is largely a matter of local conditions and misinterpretation,

Instinct tells how they should plan their lives. Instinct also tells them how to adapt any given condition to their standard plan. And, instinct makes them economize their assets by utilizing existing benefits. That is why comb foundation enables a beekeeper to keep a colony on straight combs that are nearly all worker cells. True enough, burr comb or damaged foundation can make a lot of trouble, and if you don't think that it is worth while to use full sheets, just try to do without them sometime.

Another thing that puzzles beginners is when a writer outlines a method of swarm control, and when you try it yourself the bees ignore your efforts and swarm and swarm and swarm. The fellow who wrote that book wasn't wrong. Probably some condition existed that you didn't recognize, and after a little more experience with it, or an adaptation of it, it will work for you too.

This subject seems to be getting too big for a single page, so the next chapter will appear next month.

Chairman's Report

MILLARD COGGSHALL
Chairman, Honey Industry Council
Minneola, Florida

IT IS WITH a considerable amount of personal pride that I make this report to you as the first American Beekeeping Federation member to be chosen as Chairman of the Honey Industry Council. A look at the names of those who have had this job before me—Alan Root, Bob Willson, Roland Stone and Ken Bradshaw—makes me a little scared to be in that big a league. However, a look at the names of the other Council members makes me realize I have a Chairman's dream. How can anyone go far wrong with members like John Root and M. G. Dadant of the Bee Industries Association, Wendell Shore and Ken Bradshaw of the National Honey Packers' and Dealers' Association, Leslie Little of the American Bee Breeders, and Laurence Budge, Henry Hansen, and Charley Miller of the Federation? I can assure you that I have already handed out good stiff jobs to most of these men, and have plans for the rest. Vice Chairman, Wendell Shore and Sec.-Treas., Leslie Little, are in for an especially busy year.

The Honey Industry Council now has two main jobs. One is to represent the entire industry on matters affecting its welfare or the welfare of any one of the four groups listed above that support the Council. Previous Council chairmen and the four industry groups have done much to build up the Council's position as the responsible spokesman for the industry, particularly with regard to our dealings with various government agencies.

The second main job of the Council is to operate the Check-Off plan to secure money for honey promotion. I plan to devote the major part of my Council activity to building up sincere honey packer and producer participation in this plan, so that we can get started doing some effective honey promotion before it's too late.

We are going to have an all-out campaign to get every honey packer, every honey dealer, every honey marketing co-op, every producer-packer, and every producer using this Check-Off plan this year.

The package bee and queen producers have expressed their desire to participate in the plan on a comparable basis of dollar sales volume. A series of letters will soon be going to the large scale honey packers, whose sincere support we must have, urging their use of the Check-Off plan on an automatic basis. I will report to you in future issues of this magazine as to our progress in this and other matters.

Three Abnormal Bees

DR. J. E. ECKERT
Univ. of Calif.
Davis, Calif.

QUITE FREQUENTLY a careful observer will notice abnormally formed bees in colonies as the combs are being manipulated for various reasons. The abnormalities may consist of different eye colors than the normal brown or black, gynandromorphism (the inclusion of both male and female parts in the same bee), or other malformities due to genetic or to environmental factors.

This summer I observed a worker bee tugging at another bee that did not look normal. Closer examination indicated that the abnormal bee had drone eyes, the right mandible, right half of the proboscis, and the right side of the thorax were worker types while the left counterparts were male. The third and fourth abdominal segments were part drone and part worker, the left parts being drones. Then a most unusual abnormality was a sting and the various sting plates being formed on the outside of the tip of the abdomen. The sting was poorly developed, so I thought the bee might also contain vestiges of the male reproductive organs, but this was not the case. The legs were of the same length and the hind legs had well formed pollen baskets.

The second and third abnormal bees observed were queens taken from separate nuclei. Queen number one had a large abdomen midway between a drone and queen in conformation. The left compound eye and the left legs were like those of a drone. Dissection revealed a well developed poison sac and sting, a well developed spermatheca that contained no sperms, but there were no ovaries. There were poorly developed oviducts and vagina and also partially developed mucous glands of the drone.

The beekeeper who gave this queen to me said that she had never laid any eggs. No wonder.

The second queen examined was one that looked normal in every respect but had never laid any eggs. Her abdomen was as large as a laying queen. After 30 days in a nucleus, dissection revealed that she had well developed ovaries in which there were several mature eggs in many of the ovarioles but the ovaries were not connected to the oviducts. There was no opening from the oviducts because the mature eggs were all found in the lower parts of the ovarioles. The spermatheca was filled with viable sperms, indicating that she had mated. There were no other abnormalities internally or externally.

This was an interesting case because the stimulus for the production of the eggs was present and the eggs were being formed from the tips to the bases of the ovarioles. The ovaries were beautifully white with no evidence of any of the eggs having been absorbed.

Having A Shower ?

MRS. BENJ. NIELSEN
Aurora, Nebraska

THEN WHY NOT make it a breakfast? To start things off right serve a honey-sweetened fruit cup (easy on the honey—just a light touch to point up flavor) one of the crisp special protein cereals to perk folks up for games and advice to the honoree, and a piping hot golden brown honey pecan coffee bread fresh from the oven. Scrumptious and easy!

Quick Honey Pecan Bread

One package active dry yeast, 1 teaspoon honey, ¾ cup warm, not hot water, ¼ cup honey, 1 teaspoon salt, 2¼ cups sifted flour, 1 egg and ¼ cup soft butter.

Measure water into mixing bowl, add 1 teaspoon honey and yeast, stirring to dissolve. Then stir in additional honey, salt and 1 cup sifted flour. Beat until mixture sheets off spoon; about 2 minutes. Add egg, butter and remaining flour and beat until smooth. Prepare upside down topping mixture (given below) grease 9-inch square pan, 10-inch skillet, or 18 medium sized muffin tins, add cooled topping; then drop small spoonfuls of dough over topping. Cover; let rise in warm place until double in bulk; about one hour for coffee cake; about 20 minutes for buns. Bake in moderate oven, 375°F., 30-35 minutes for coffee cake, 15-20 minutes for buns. Turn out immediately to prevent sticking.

Honey Pecan Topping

Melt ⅓ cup butter, mix in ⅓ cup brown sugar, tightly packed, 1 tablespoon of honey and ½ cup pecan nutmeats.

A honey way breakfast for that shower.—Courtesy The Kellogg Company.

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Fruit Pollination In Nova Scotia

Due to the decline of native pollinating insects, and the declining annual fruit sets, these men began looking into the problem and have come up with some interesting facts.

E. A. KARMO, Apiarist and
V. R. VICKERY, Entomologist
Nova Scotia Dept. of Agriculture and Marketing, Truro, N. S.

PRACTICALLY ALL apple and pear varieties in the East have to be considered as commercially self-unfruitful. Their pollen is too heavy to be carried by wind. In the absence of insects, no transfer of pollen from one variety over to the other can take place and, hence, very little fruit will set.

Pollination in Nova Scotia a quarter of a century ago was no problem because up to 50 commercial varieties of apples were grown in mixed orchards. The number of recommended varieties has shrunk to six, and the modern trend toward planting large blocks of single varieties has further impeded the pollen transfer and, in many cases, it became increasingly difficult to procure consistently good fruit sets. The Nova Scotia Department of Agriculture and Marketing, being confronted with this pollination problem, attempted to clarify one or two points.

Modern farm practices have reduced the areas suitable for nesting sites of bumblebees and small solitary bees, which constitute the chief native pollinating insects. The question arose—are there enough of them in orchards, especially in face of the often poor weather conditions for insect activity during apple bloom?

Counts of pollinating insects working apple bloom have been taken in the same six orchards of the Annapolis Valley, N. S., every year since 1951. Tests for the most efficient use of the honeybees to supplement the native pollinators were tried and certain recommendations were worked out over the years of 1951 to 1954. The feasibility of the methods has been proven by the growers, and the use of the honeybees in orchard pollination is now rapidly expanding throughout the Valley. Insect counts given in Table 1

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illustrate the relative change in the pollinating insect composition in the six orchards under study.

Table 1 Insect Counts Per Tree in 15-Minute Periods

	Number Honeybees	Number Solitary bees	Number Bumblebees
Av. for 1951-53	0.9	5.0	2.0
Av. for 1954-56	16.5	4.5	2.3

Is it a coincidence that the Nova Scotia apple crops for the last three years were considerably higher than for the previous three-year period?

Honeybees are the only pollinating insects which man has so far been able to breed and move around at will. Maximum results from using honeybees for orchard pollination can only be achieved if the operator knows the possibilities and the limitations of this living tool. It is not enough merely to have bee colonies in or near the orchard. The colony may have a foraging range of two miles, and the most profitable nectar and pollen sources would be worked and the less attractive ones neglected. Moreover, the working area of any individual bee in the field may be too small to effect cross-pollination. Mimeographed circular No. 67, "The Place of Honeybees in Orchard Pollination", issued by the Nova Scotia Department of Agriculture and Marketing, has taken these factors into account and suggests ways and means of overcoming the obstacles. In the discussion that follows the main points of this circular are given.

Since only pollen grains of the same species can accomplish fertilization, the most effective insect pollinators are those which show fidelity to species; that is, visit and revisit the same species. Honeybees in this regard rank very high, and flies very low, whereas the bumblebees and solitary bees come fairly close to honeybees. In the honeybee colony there are two groups working in the field—the scouts and the foragers. The scouts search for sources of nectar and pollen, be it in locations hereto not worked by the colony or a new species coming into bloom in an area well worked by foragers for another species. The location and the quality and quantity of any worthwhile sources will be reported back in the hive, and the best of them will be worked over by the foraging group.

The quantity and sugar concentration of the nectar of different plants vary considerably. Temperature and moisture have a great effect upon secretion and concentration of nectar. **Dandelion nectar is higher in sugar than apple nectar and is secreted freely at lower temperatures. The honeybees can distinguish between nectars showing a five percent difference in the sugar content and invariably they prefer the sweetest solution.** This appears to be the determining factor in the preference shown by bees to certain plants. A varietal preference is also noticeable. Wagener is visited more freely than the varieties McIntosh or Gravenstein. Variation also occurs within varieties due to soil, slope, availability of plant food, etc.

Each foraging bee works a small area, called the "fixation area", and remains faithful to a single species in that area until the source becomes depleted as the bloom period comes to a close. The fixation area appears to be determined by the number of flowers and the abundance and concentration of the nectar provided by the flowers.

The driving force behind the foraging activity is the demand of the huge nursery inside the hive. There may be 10,000 to 30,000 adult bees in a populous colony at fruit bloom time. However, their food consumption is modest compared with the flood of food that has to be given to each of the 10,000 to 30,000 "babies in the cribs". Each baby requires about 10 loads of pollen and many more loads of nectar to rear it from egg to adulthood. Stored honey may be used to meet the demand on carbohydrates but fresh pollen must be gathered to supply the need for proteins. Pollen is so important to the bees that they will take advantage of even slight respite in otherwise poor weather to add to their supply.

In an average colony in the spring, new bees are emerging at a rate of about 1,000 per day. This releases an equal number of "house bees" for outside duties. Many of these bees follow the advice of the "scout bees", which are continually seeking new sources and work these new sources. The older field force gradually becomes depleted and younger bees work a wider area.

When a colony is moved to a new location some miles away the bees are

Honeybees are the only pollinating insects which man has so far been able to breed and move around at will.

deprived of their old pasture so the scouts immediately begin searching for a new source of supplies. This could be the same plant species as worked in the old location but usually is the best source close to the hive. If bees are being moved to an orchard for pollination, the scout bees should find the crop where cross-pollination is desired before they find different crops or crops of the same species beyond our boundary line. To ensure this, the following conditions should be met:

1. Pollen and nectar must be available from apple bloom in the orchard. **Bees should not be moved in until there are enough flowers open to provide an attractive source;**

2. Colonies must be placed in a sheltered but sunny place within the orchard;

3. If the colonies are evenly spaced throughout the orchard, the distribution of foraging bees is more even than when the colonies are placed in a single location.

Colonies on permanent sites are effective pollinators only when the bee population is dense enough so that all available sources within the flight range will be worked. **Bees of these established colonies will be found on any attractive source within their range of up to one and one-half to two miles.** Only a certain proportion of the bee population will be working the orchard in question and if the other sources are more attractive, this proportion may be rather small.

The number of colonies used in orchard pollination does not need to be large if the colonies are strong and they are moved in when the bloom is attractive and the weather is suitable for bee flight. One colony may adequately cross-pollinate several acres in a single afternoon if compatible pollen is available.

Cross-pollination is dependent upon two factors: (1) the supply of suitable pollen; and (2) the transfer of this pollen.

(1) The supply of suitable pollen usually is provided by setting out mixed varieties, interplanting pollinizing trees, grafting limbs into trees, etc. This pollen must be viable, compatible, and available at the time when the stigmas are receptive.

Even where pollinizing varieties have been planted there may be cases when suitable pollen is lacking. This may result from the varieties present not blooming together, or not being compatible, or when anthers are not shedding pollen or when the pollen shed is

not viable because of damage from rains, frost, or other conditions. Without suitable pollen, even a high insect population working the bloom will not effect pollination. These cases can be corrected by supplying pollen.

(2) Where pollinizing varieties are provided, high insect activity will usually take care of the transfer of pollen.

Because of the rather limited foraging area of an individual honeybee, which in the case of fruit trees does not exceed one single tree or sides of adjacent trees, the pollinizing varieties should be so planted that every tree is adjacent to a pollinizing variety (at least every third tree in every third row). The slight overlapping of the working areas of the individual bees which does occur will, in mixed orchards, effect the transfer of pollen from pollinizing trees to trees to be pollinated. There is also some transfer of pollen from the hair-coat of one bee to the hair-coats of others due to brushing together within the hive.

Whenever pollen for cross-pollination is not available, it can be supplied by the grower, usually in the form of "processed pollen" which is commercially available. This pollen may be transferred to the blossoms in various ways.

A. **By hand.** It requires about 40 hours and a minimum of two ounces of pollen to hand-pollinate with a brush an acre of mature apple trees.

B. **Blast pollen into the trees** with a shot gun, employ air blast, etc. This is a rather costly and wasteful method.

C. **Hand-pollinate a small percentage of the blossoms** of each tree and provide a good bee force to disperse this pollen over the whole tree.

D. **Pollen inserts** can only be used in conjunction with beehives. Pollen is placed in the inserts in the passageway of the outgoing bees and they thus carry (unintentionally) small amounts of this pollen to the blossoms whch they are working. This is the most economical method of transferring processed pollen. One or two ounces, under favorable conditions, should be adequate to pollinate one acre. We have had very good results using much less than this amount.

The pollen in hive inserts appears to stimulate bees to greater foraging activity. Our observations have revealed that out-going bees gather small amounts of this pollen, return to the hive and apparently perform "pollen dances" before leaving in search of similar pollen. Such a colony will send out a large number of foraging bees. **Pollen should be provided in the trough of the insert when the bees emerge from the hive on the initial flight in the new location. Pollen soon loses its viability under orchard conditions so it should be replenished every hour or two while the bees are flying.**

This apparent stimulatory effect is especially noticeable in colonies supplied with pear pollen for cross-pollination of pears. **Normally, bees do not like to visit pears as the nectar is strong and pungent and low in sugar concentration. However, when pear pollen has been supplied, the bees will visit pears readily to gather pollen and will effect a high rate of cross-pollination and subsequent fruit set.**

Colony Rotation

As the bees sooner or later do spread out from the hive location to cover their flight range, the practice of "colony rotation" has been adopted. Colonies are left in an orchard for a day or two, then moved to a new location not closer than one and one-half to two miles away. They are replaced with other colonies from this or another location. Thus, a working force is maintained within a small area as the succession of varieties bloom. Orchardists cooperate in this venture and are able to obtain maximum efficiency from a relatively small number of colonies. The colonies can even be rotated back to the first orchard again, but this should not be done until at least 10 days after they were removed from that location. The bees can remember the places they have frequented and might tend to proceed from where they were interrupted the first time.

Summary

1. Apple and pear varieties are self-unfruitful and must be cross-pollinated.

2. A dependable pollinating force is necessary. The scarcity of native pollinating insects can be corrected by using honeybees.

3. If suitable pollen is lacking, no insect force, regardless of size, is able

(Continued on page 187)

Intruder

ON RECEIVING my Gleanings of August 1959 I came upon the article "Beekeeper Kills Bear". I had the same experience just two weeks before. The bees are in the Angeles National Forest.

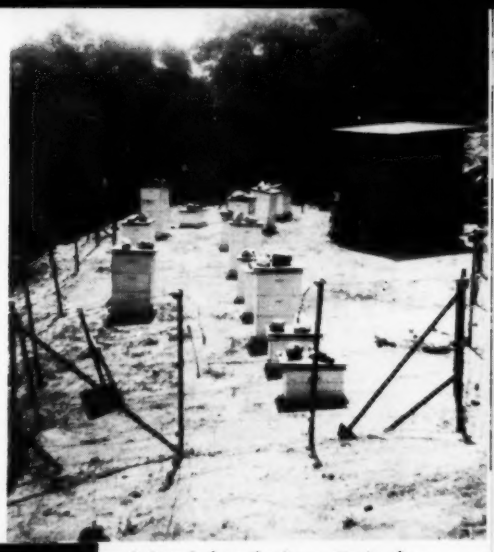
For several years we have had bear trouble. An electric fence was built using barbed wire. This seemed to do the trick.

This year due to the dry winter and no honey coming in, the bees had not been checked for several weeks.

Upon arriving one Friday night I found 10 of the 18 hives knocked over, some pulled apart, some just pushed over.

The bear had dug a large hole near a corner brace which moved against the electric fence, shorting it out.

We saved what bees and equipment we could and moved them to our winter location. The bear was trapped a few nights later.



Apiary before the bear attack. ▲

JOHN H. MEURSINGE
Yorba Linda, Calif.

◀ After the bear attack.
▼

The Phoenix Meeting

These nine men make up the Honey Industry Council. They are about to decide how best to spend the $8,642.00 to promote the sale of honey. This amount is the total receipts for the year 1959 from the producers and packers throughout the country who supported the Check-Off Plan. The members are, from left to right around the table, Laurence Budge; Charles Miller; Henry Hansen; all three representing the Federation; Leslie Little, Secretary-Treasurer, representing the American Bee Breeders' Association; Ken Bradshaw, Past Chairman, representing the National Honey Packers' and Dealers' Association; Millard Coggshall, newly elected chairman, representing the Federation; Bob Steele, alternate from the Federation; M. G. Dadant, representing Bee Industries' Association; Wendell Shore, representing the honey packers; not shown is John Root, the photographer, representing Bee Industries' Association. By far the largest percentage of the Check-Off money went to the Honey Industry Council. Some was alloted to be used to pay the expenses of the American Honey Queen and another portion was to be used to pay for a booth at the American Home Economics' Convention in Denver, Colorado. Let us hope that next year there will be greater participation by the producers and packers in the Check-Off Plan and this coupled with the increasing of the assessment from one cent per 60 pound can to two cents will give the Council more money to do a better job of promoting honey.

The question of the Enabling Act is tabled until the next annual meeting.

THE AMERICAN Beekeeping Federation held its 17th Annual Convention at the Hotel Westward Ho in Phoenix, Arizona, from January 13 through the 16th. The meeting was well attended and from all appearances was a big success.

To refer to the convention as a single meeting would not be very accurate because it is actually a series of small committee meetings, a great number of speeches, a business meeting and a banquet. To report the convention in its entirety would more than fill every

page of this magazine.

Therefore, the primary purpose of this report is to inform the members of the Federation who were not able to attend the convention of the resolutions that were passed during the business meeting.

The first five resolutions stated the Federation's appreciation of the many people and organizations who made the convention and National Honey Show possible.

The sixth resolution came from the Apiary Inspectors of America. The subject was the Acarine mite which destroys adult honeybees and has become an economic problem to the beekeepers in Europe and various parts of the world. The resolution stated that the incident of the Australian Ministry of Agriculture declaring that a shipment of bees from California was infested with Acarapis woodi pointed up the dire need for more knowledge and first-hand information on the mite. The Apiary Inspectors of America feel they should be better informed on distribution, recognition, control and eradication of the mite. To accomplish this end they suggested that the Agricultural Research Service be urged to bring a qualified Acarine mite expert from Europe to assist U.S.D.A. personnel in developing efficient plans and procedures for dealing with the problem. They also asked that a qualified American apiculturist be sent to Europe to study the disease.

Resolution number seven states that since the present market price of honey does not return the cost of production to the producer, honey should be supported from 80 per cent to 90 per cent of parity and that no honey of any grade or color in the United States should be supported at less than five per cent below the national average support price. To bring this about the American Beekeeping Federation goes on record as favoring the enactment of House Resolution 7782.

Resolution number eight dealt with the Check-off Plan and increased the assessment to two cents per 60 pound can or equivalent both for the producers and for the packers, to become effective April 1, 1960.

Resolution number nine recorded the American Beekeeping Federation as favoring the elimination of the price differential between eastern and western states which is now in effect in the present Honey Price Support Program.

Resolution number ten asked that an export subsidy program be re-established with payment at not less than two and one-half cents per pound to improve our export market and thus to use up the large surplus of honey in the hands of the beekeepers.

Resolution number eleven recommended that the chairman of the research committee be given the authority to act between annual meetings in planning and seeking financial support for research projects which are beyond the financial resources of the Federation.

Resolution number twelve states that it is imperative that funds be made available regularly to the American Beekeeping Federation to carry on its many functions and to maintain a national headquarters in keeping with the

Regal Monicca McNutt is pictured here shortly after being crowned by Arizona Secretary of State, Wesley D. Bolin. Monicca's chief duty as 1960 Honey Queen will be to travel over the country promoting honey on T-V, radio and at county and state fairs. She will be limited by the funds available for her travel, but if your state association would like to use her services to promote honey at some event, her address is, 601 Donelson Pike, Nashville 14, Tenn.

XUM

importance and size of the beekeeping industry. In order to do this it is recommended that the by-laws be changed to bring about the following schedule of dues and fees, to go into effect during the year 1961.

Annual membership dues for all persons who are not commercial beekeepers and who do not fall into any of the following categories shall be $5.00.

The annual membership dues for all commercial beekeepers operating up to 500 colonies shall be $25.00; from 500 to 1,000 colonies, shall be $40.00; from 1,000 to 2,000 colonies shall be $60.00; and 2,000 colonies or more shall be $100.00. Annual membership dues for all full time supply manufacturers shall be $200.00.

Annual membership dues for all supply dealers shall be $25.00.

Annual membership dues for all package and queen breeders shall be $25.00.

The registration fee for the annual convention shall be $3.00; this one fee to include all members of a family living under one roof.

All visitors to the annual convention who are not citizens of the United States and who are not permanently residing in the United States shall receive complimentary registration.

This resolution was amended to include honey handlers and packers. Their dues would be $100 or $200 per year, depending on their size. Since the resolution requires a change in the by-laws it will probably not go into effect until it receives ratification from a given majority of all the Federation members.

Resolution number thirteen extended the Federation's thanks and appreciation to Dr. D. C. Jarvis of Barre, Vermont, for his great contribution to the honey industry through his book "Folk Medicine" which has been the most effective means to bring before the public the valuable therapeutic properties of honey.

In all, three resolutions failed to pass, and one which was probably the most controversial and took most of the business session was tabled until next year's annual meeting. That was a resolution to recommend the passage of the Enabling Act, Senate Bill 1989 and House Resolution 8269.

Also accomplished during the business meeting was the election of officers. In this case it was the re-election of officers. Those re-elected were: Laurence R. Budge of Idaho, President; Henry Hansen of Iowa, Vice President; Charles Miller of Wyoming, Federation Representative to the Honey Industry Council. These officers were elected by the entire assembly. At a later session of the Federation Executive Committee, Joseph Moffett of Colorado was re-appointed Secretary-Treasurer.

The next meeting of the American Beekeeping Federation will be held in Omaha, Nebraska.

A bird's eye view of Phoenix, Arizona.

CLOSSON SCOTT
Pendleton, Oregon

For sale, cheap.

My Introduction to Beekeeping

ALONG ABOUT the year 1907, in Northeastern Ohio, father attended an auction sale where one of our neighbors was disposing of all his farm equipment. There were some hives of bees included and they were going cheap. Father bought them.

Springtime arrived and the five hives of bees came to life. Father was not a beekeeper, and neither was I nor my brother aged 11. I was 15 and father offered me the bees if I would take care of them. I had to have a helper, so my brother was elected.

We decided to tackle the bees. We knew they would sting, but we also thought we could handle them. We had an old smoker with a loose top and we fired it up. We also tied strings around our ankles so the bees couldn't crawl up our pant legs and we got some old mosquito netting which we draped over our straw hats and carefully tucked into the necks of our shirts. We got hold of an old chisel to pry the covers off the hives and to help loosen up the frames, and we sallied forth.

I was to open the hives, my brother was to work the smoker. I pried and tugged and the top came loose. I lifted it and out came a cloud of bees, very angry bees, in fact the angriest bees I have seen in my entire lifetime. My brother started to puff the smoker, a bee lit on him where the single thickness of his thin pair of pants was thinnest and he turned the smoker on that bee. The top fell off of the smoker, and by this time it was so hot that when I tried to pick it up it burned my fingers. The bees were pouring out of the hive, and we suddenly found that mosquito netting close to the skin is not much protection, also those bees had an uncanny sense of where to crawl inside our pants. They found holes we didn't know were there. All of a sudden we decided to leave and as the man said "we stood not on the order of our going".

We found shelter in the cellar. It was dark and cool in there. While the bees buzzed around angrily outside, we assessed the damage. There were stings around our shirt collars where the netting was tucked under, there were bees inside our trousers, there were stings here, there and just about everywhere. We had been completely routed. As far as I know my brother never went near a bee hive again, but he told me when I visited him a year ago that he still remembers the experience.

As for myself, after an experience like that, what made me go back? Someway I got the cover back on the hive. Today, 52 years later, and away out here in Oregon, I have 85 colonies of bees, and my relatives are sure I am a little "tetched in the head", I am not sure but they are right.

A Talk To Beekeepers

M. J. DEYELL

It has always been the opinion that it took two seasons to realize a surplus crop from package bees; however, with correct care they may surprise you.

ALL OF US who plan to secure a profitable return from bees this coming season should plan ahead intelligently. Perhaps some of us have been a little lax in attending to details. While it is a fact that colonies of bees will look after themselves to quite an extent if given an abundance of food in the fall, it is necessary to be on hand early in the spring to see that none of the essential requirements are lacking.

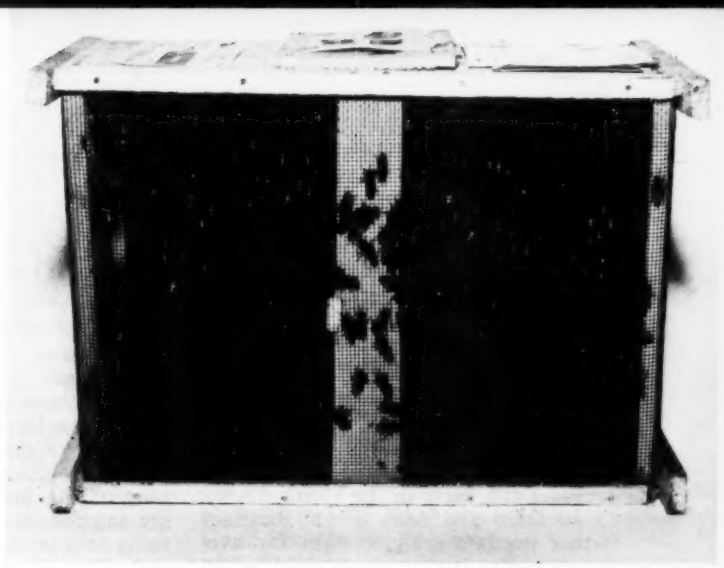
Watch for Dead Colonies

If we can visit our bees on a day when they have their first good spring cleansing flight, we should close up tightly the entrances to hives in which colonies have died during the winter. Regardless of how well the bees were prepared for winter there may be a small percentage of winter loss. Once in awhile we have an apiary that comes through 100 per cent. Just why queens in a few colonies fizzle out during the winter I am unable to say, especially when these queens appeared to be perfectly normal in the fall. Such colonies, if fairly populous, having some young bees left, are usually worth requeening. However, if such colonies consist mainly of old bees that die off quickly it is a waste of time to put in new queens. If there is honey in the hive, this can be used to feed other colonies that need it.

Closing hives containing dead colonies will prevent bees from other hives robbing the honey from these hives. If bees start to rob in the spring they will probably continue robbing for some time and will sometimes pounce on a colony that isn't up to normal strength, overpower it and rob all of the honey out of the hive. Such a condition makes it difficult to manipulate hives during the spring and that is one good reason for closing up hives containing dead colonies as soon as they are found.

The Uses of Package Bees

In the event that some new readers of Gleanings may not know what package bees are, let us say that they are bees that are shaken from strong colonies into shipping cages made of wire screen and wood, of convenient shape and size for shipping and handling. A package of bees is somewhat comparable to a swarm. Package bees are furnished by beekeepers in the South where colonies reach normal strength earlier than they do in the North. Packages vary in size from two to five pounds of bees. The two and three pound sizes are most common. The five pound size is sometimes used for orchard pollination. Unless otherwise specified, a queen bee confined within a small cage accompanies each package. Each shipping cage has a small friction top can containing sugar syrup. Two or three very small holes are punched in the cover of this can which is turned upside down and held securely inside



A three-pound package of bees ready to be put into a hive.

the shipping cage. The bees get the syrup through the small holes in the cover of the feeder can.

Packages are used for strengthening weak colonies, for starting new colonies, and for replacing dead colonies.

Strengthening Colonies

A weak colony if not strengthened may die out in the spring. A two pound queenless package united with a weak colony gives it a tremendous boost.

To unite a queenless package of bees with a weak colony, gorge the bees in the package, also those in the weak colony, with warm sugar syrup made of equal parts of granulated sugar and water. If the weather is cool it is an advantage to feed the syrup when it is warm. The syrup may be sprinkled on the wire screen of the shipping cage, also on the top bars of the frames in the hive containing the weak colony.

Shake the queenless bees in front of the hive to receive the bees and let them walk in. This should be done when the weather is reasonably warm.

The bees in the weak colony will not object to the queenless bees and the queenless bees in the package are naturally anxious for a mother. If the weather is cool the queenless bees should be shaken into the hive containing the weak colony, after a few of the empty combs are removed temporarily from the side of the hive to make room for the bees that are shaken in.

Packages for Starting New Colonies

When establishing new colonies of bees or making increase in the apiary, the hives should be assembled, then placed on their stands to be in readiness for hiving packages when they are received. If there are no frames containing drawn combs available, frames with full sheets of foundation should be used. Sugar syrup should be fed continuously until nectar is plentiful. The feeding causes the bees to draw out the comb foundation. It also stimulates the queen to her best efforts in egg laying.

When hives containing combs with honey and pollen are used for hiving packages, it is not necessary to feed so much sugar syrup. By all means use combs of honey for food if such are available.

Packages to Replace Winter Losses

No beekeeper should allow perfectly good hives and equipment to stand idle when packages are available and when good returns can be secured from them the same season. It is possible, when conditions are favorable, to secure returns from an investment in packages, within three months from the time the packages are installed.

Watch for Diseased Combs

If American foulbrood is prevalent in the vicinity, combs in dead colonies should be examined carefully for indications of disease. It would, of course, be folly to install package bees in hives containing diseased combs.

If the cells in the middle of the combs are found to be free from dead or decayed brood or the dried-down remains of larvae "scales", they are

probably free from disease. If however, the remains of dead larvae lying lengthwise on the bottom sides of the cells are found dried down into hard scales that adhere tightly to the bottom of cell walls, this sympton indicates AFB. If in doubt, a sample of the comb should be sent to Bee Culture Section, Dr. C. L. Farrar, University of Wisconsin, Madison, Wisconsin, for diagnosis.

For this purpose a piece of comb four or five inches square containing a number of dead larvae should be sent in a wooden box.

When to Hive Packages

There is no advantage in getting packages too early in the spring. April 15 in Ohio and May 1 for localities farther north are about right for average seasons. It takes from eight to ten weeks for packages to build up to full strength colonies ready for the main honey flow. A critical time in the development of a package into a normal colony is during the first three weeks. It takes three weeks from the time the queen begins to lay until young bees emerge. Then it takes two more weeks for these young bees to reach the honey gathering age, making five weeks before there are young bees of the honey gathering age, resulting from the first eggs the queen lays. When young bees begin to emerge, package colonies will forge ahead, provided weather conditions are favorable for bees to gather nectar and pollen.

Most Profitable Size of Package

In the Northwest where the major honey flow comes rather late and is long drawn out, as in the sweet clover and alfalfa areas, the two pound package gives good results. In the white clover and alsike regions where the flow is relatively short, the three pound package seems preferable, because it is necessary to have colonies up to the peak of strength at the time the main honey flow starts. Frequently, a honey flow from alsike and white clover lasts only two or three weeks. And so it may be said that for most localities the three pound package is preferable.

Points to Remember

1. Be sure to order bees early in the season and specify, if possible, the date shipment is desired so that the shipper may make his plans to suit your convenience. Plan to have the bees arrive seven or eight weeks before the beginning of the main honey flow. If bees are shipped by express have your agent call you as soon as the bees arrive.

2. Do not place hives too close together. They should be at least six feet apart, otherwise the bees may drift from one hive to the other. Hives should face south, if possible.

3. If the weather is hot when the bees arrive, place packages in a cool dark room. If weather is cold, place them in a room not warmer than 70°F. until ready to hive.

4. Feed bees sugar syrup before hiving. Make syrup by mixing one part sugar and one part water until the crystals are dissolved. Continue feeding until the bees are gorged. Syrup may be applied to the screen of shipping cage with a cloth or brush. This will make them quiet to handle.

5. Install bees late in the evening, if possible, to avoid drifting. Have your hives ready on permanent stands, each containing four or five frames with drawn combs, or frames with full sheets of comb foundation. The queen which is usually shipped in a cage so

A 10-pound pail of sugar syrup inverted over the opening of inner cover so that the bees can take the syrup through small holes in cover of pail.

that she cannot get out, is hung between the two middle frames after the cardboard or piece of cork is removed from the end of the cage so that the bees may eat the candy out of the hole in the end of the cage in order to liberate the queen. The bees in the shipping cage may be emptied into the space at the side of the frames and as soon as the bees have crawled onto the combs, the frames which were removed from the hive temporarily, may then be put back into the hive and the cover put on. Continue feeding until nectar from natural sources is available in quantity.

There are different methods of feeding and different kinds of bee feeders. Quite a number of beekeepers use the five or ten pound friction top pail feeder. The warm syrup is put into the pail and the cover of the pail is punctured with about a dozen small holes made with a two-penny nail. The pail of syrup is then turned upside down over the small opening in the center of an inner cover, then an empty hive, or, in the absence of such a hive, a box is placed on the inner cover to protect the pail of feed, then the regular hive cover is placed on top.

It is possible, of course, to use a regular division board feeder, or a Boardman entrance feeder. The entrance feeder works all right when the weather is warm but sometimes during a cold spell the bees hesitate to take feed out of the entrance feeder.

Importance of Ample Food

The majority of beginner beekeepers do not give their package bees a sufficient amount of sugar syrup. In most localities there is a spring honey flow from dandelion, fruit bloom and other sources which enable the bees to gather a considerable amount of nectar and pollen to stimulate brood rearing. In most localities there is a short dearth of nectar between the spring flow and the major honey flow later on. It is during this dearth that bees should be fed an ample amount of sugar syrup, in order to keep up brood rearing.

Good Results are Possible with Packages

It is really amazing what can be done, in the way of securing a crop of surplus honey from packages of bees, when they are installed reasonably early and given the proper management during the time they are building up to normal strength colonies. As has already been stated, purchasing package bees is one good way to obtain profitable returns from an investment the same season. It should be said, of course, that it is necessary to have a good honey flow and suitable weather for nectar secretion in order to obtain maximum results.

NOBODY TOLD ME

RAY L. McLESTER
Paragould, Arkansas

SOME RATHER "upper crust" acquaintances visited me and my little honey house. They "Oh'd and Ah'd" until before they left I presented them two of the nicest frames of cut comb honey I had. It was of a quality to make me take pride in it.

Later, they returned the frames and reported that the only way they could think of to eat it proved to be very successful. "We cut the honey comb out of the frames and ground it all up in our food chopper. The next day so much of the comb giblets had floated to the top that we skimmed them off so nearly clean that we ate the rest without even getting indigestion."

"I KNOW HE THINKS THE WORLD OF HIS HONEY, BUT, AFTERALL, HONEY FOR HOLIDAYS, CHRISTMAS PRESENTS, BIRTHDAYS, ANNIVERSARIES..."

NEWS and EVENTS

PENNSYLVANIA
State Beekeepers' Association
and Farm Show
Harrisburg, Penna.
January 12, 1960

The winter meeting of the Pennsylvania State Beekeepers' Association was held in connection with the Farm Show at Harrisburg on January 12, 1960.

The display of honey, and individual displays of county associations and beekeepers, located near the entrance of the building, were very attractive. These excellent displays are sometimes seen in public places, and if there were more of them the public would be much better educated concerning honey and beekeeping.

The displays and honey were judged by R. H. Anderson of Cape Town, South Africa, who is a government official currently studying at Cornell University. Mr. Anderson gave an enlightening talk on African beekeeping, comparing it with our methods.

There were talks by Prof. E. J. Anderson of Penn State, Geo. Sleesman, Chief Inspector, Bill Clarke, Extension, and W. H. Henning, Director of Agriculture. Floyd Sandt, retiring president, presided, and Paul Cummins reported on the honey booth which he directs.

Officers for 1960 are as follows: President, Harry Merrill, Muncy; Vice President, Murray Schuman, Cumberland Co., Secretary; Robert Crimbring, Canton.

The evening banquet, well attended, was directed by Rev. S. A. Sitler. Mr. R. H. Anderson showed a series of enlightening slides which he had taken in his homeland, the Union of South Africa.

The Pennsylvania Honey Queen for 1960, Miss Shirley Frank was presented at the banquet. She also worked in the honey booth.

It appears that the decision to confine the meeting to a one-day affair was a wise one for attendance and interest in the meeting were improved this year.

MIDWESTERN
Beekeepers' Association
Kansas City, Mo.
March 13, 1960

The Midwestern Beekeepers' Association will hold its regular monthly meeting in the I.O.O.F Hall, 812 Westport Road, Kansas City, Mo., at 2:30 P.M., Sunday March 13, 1960. This meeting will feature a speaker, also a discussion on "Handy Hints for the Bee Yard". Everyone welcome.—J. A. Worrel, Secretary.

NORTH CAROLINA
State Beekeepers' Association
Greensboro, N. C.
March 16, 1960

The North Carolina Stae Beekeepers' Association will hold its annual spring meeting on March 16, 1960, at the Guilford County Agricultural Center, located on the north side of Highway 70A in the eastern edge of Greensboro, N. C., between the Guilford County Home and Clark's department store.

There is plenty of parking space and lunch will be served on the premises at reasonable prices.

A tour will be arranged after lunch for the ladies not interested in bees and the beekeepers will visit a local apiary later in the afternoon if the weather permits.

We always learn something and try our best to teach others something at these meetings, so bring your family and all your beekeeping friends.—S. C. Squires, Secretary-Treasurer.

MASSACHUSETTS
Norfolk County Beekeepers' Assoc.
January 4 to April 18
Norfolk Co. Agricultural High School

The Norfolk County Massachusetts Beekeepers' Association is conducting a short course in beekeeping of eight sessions from January to April, under the direction of John C. Proctor, of Needham Heights. The meeting place is Norfolk County Agricultural High School. The remaining sessions are as follows:

Mar. 7 Anatomy of the Bee Slides
—Milo Bacon (Norwood)
Honey Plants Slides
—Wallace Parker (W. Boylston)
Mar. 21 Honey Production
—Aylmer Jones
Movie: "Bees and Honey"
Apr. 4 Diseases of Bees Specimens
—Milo Bacon
Enemies of Bees
—John Heemskerk (Needham)
Movie: "Pollination of Alfalfa"
Apr. 18 Standards of Honey
—Speaker to be announced
Movie: "Cranberry Story"
Installation of Package Bees
—John Proctor Demonstration

MISSOURI
Eastern Beekeepers' Association
St. Louis, Mo.
March 3, 1960

The second meeting of the Eastern Missouri Beekeepers' Association will be held at 7:30 P.M. March 3rd, 1960 at the Missouri Botanical Garden, St. Louis, Missouri.

Ray Reinhold will speak on Honey Comb Foundation, also demonstrate fastening in frames, with and without wire support.

Last meeting Messrs. Lueddecke and Nagel gave us a refresher on "Spring Management of Bees and Equipment and the Importance of Feeding Sulfathiazole". —Julius E. Simon, Sr., Sec.

No Matter What Your Interest

Whether you are a Commercial Beekeeper; a Sideline Beekeeper; or a Beginner Beekeeper,—you'll find what you want in ABJ. PLUS Science and Industry; Honey Plants; Meetings; Crops and Markets—AND your questions answered FREE.

Send for a sample copy.

American Bee Journal
HAMILTON, ILLINOIS

Obituary

WALTER KLABUHN

WALTER KLABUHN, a charter member of the Stark County (Ohio) Beekeepers' Association and a long time resident of Canton, died recently at the age of 73, following a long illness.

HONEY PRICE SUPPORT

The United States Department of Agriculture in their summary of the Honey Price Support as of December 31 show 1,000,000 pounds of honey outstanding under the loan program. This compares with 5,000,000 pounds under loan on the same date in 1958 plus 8,000,000 pounds under the purchase agreement. So roughly last year there was 13 times as much honey as the year before pledged in one form or another to the government under the support program.

In 1957 under both loans and purchase agreement there was slightly in excess of 2,000,000 pounds; in 1956, a million and a quarter pounds. It would certainly appear as if there were no excess of honey on hand at the present time.

Twist
No. 1 Grade
Supers
$1.10

Supers
No. 2 Grade
Supers
90¢

Prices apply in lots of 100 or more.
Original Manufacturer of No. 2 Grade Supers
201 Alpha St., San Francisco 24, Calif.

GRAY CAUCASIANS

	1 to 49	50-up
2-lb. pkg. w/q	$4.25	$4.00
3-lb. pkg. w/q	5.25	5.00
Queens	1.40	1.25
Tested queens,	$ 3.00	
Breeders,	10.00	

Quality Bees and Dependable Service. Shipping date about April 5th. Via express or parcel post. Write for circular containing parcel post rates and other information.

BOLLING BEE CO.
Greenville, Ala.

TEXAS CAUCASIAN QUEENS AND PACKAGES

	1-24	25-99	100 up
2-lb. pkg. w/q	$4.50	$4.25	$4.00
3-lb. pkg. w/q	5.60	5.30	5.00
Queens	1.45	1.35	1.25

All queens personally produced by J. E. Hastings and his breeding stock. Bred for non-swarming, very gentle, good honey producers. Health certificate, weight, and live arrival guaranteed.

KANES APIARIES
Route 1, Box 200 Hallettsville, Texas

QUALITY QUEENS FOR '60
LEATHER ITALIANS

A strain that has gained world wide approval for almost half a century.

Price $1.00 each.

10% discount on lots of 100 up.
Begin shipping March 20th.
Shipments outside USA and Canada add 15%.

O. K. ANDERSON & SON
Box 193 Coffee Springs, Ala.

ITALIAN BEES & QUEENS

3 lb. with queen $4.20
4 lb. with queen 5.10
Extra queens 1.15

For queenless pkg. deduct price of queen. Live delivery and health certificate guaranteed. 10% cash books your order.

DAIGREPONT APIARIES
HESSMER, LA.

NUCLEI MADE TO ORDER

4 frames with plenty of bees and young queen. $5.00 in your equipment. PACKAGES and CAUCASIAN QUEENS.

DELMAR L. SMITH
1954 Scenic Ave. Central Point, Oregon
A Lifetime Among the Bees.

NORTHERN CALIFORNIA BEES and QUEENS

Spring queens until May 5.

	Italian	Starline
1-10	$1.50	$1.80
10-25	1.35	1.65
25 or more	1.20	1.50

After May 5

less than 25	$1.10	$1.40
25 or more	1.00	1.30

Place your order with us and be assured of top quality queens and prompt, courteous service.

GEO. E. SMITH & SON
Rt. 4, Box 59 Yuba City, Calif.
Phone SHerwood 2-3511

LITTLE'S
ITALIAN QUEENS

1 to 24	$1.45
25 to 99	1.35
100 and Up	1.25

Until June 15

ROYAL JELLY
Bulk & Capsules Write for Prices
LITTLE'S APIARIES
Shelbyville, Tennessee

QUALITY BRED ITALIAN QUEENS

BREEDERS SELECTED FROM OUR NORTHERN APIARIES FOR HARDINESS AND HONEY PRODUCTION. AIR MAIL DELIVERY ON ALL QUEENS:

Jan. through May ...$1.25 each
June through Sept. .... .75 each

Write for prices on Package Bees Eby's Permanent Foundation and bee supplies. We are in the market for wax.

Walter D. Leverette Apiaries
R. L. LEVERETTE, MGR.
P.O. Box 364 Ft. Pierce, Florida

Norman's BEES and QUEENS

NOW is the time to book your orders for early spring and summer delivery. Book them with me and be sure of getting pure bright 3-band Italian Bees and Queens. Prompt service and safe arrival guaranteed. State Health Certificate furnished.

Untested Queens	$1.00
Tested Queens	2.00
2-lb. packages w/q	3.75
3-lb. packages w/q	4.75
4-lb. packages w/q	5.75

Package bees shipped F.O.B. express or via parcel post. A member of the State Beekeepers' Association.

JOHN A. NORMAN
Grady, Alabama Route One

Package Bees "Italians" Queens

Never before have good packages and queens been so important. Serving those who demand the best.

— PRICES —	1-9	10-49	50 up
2 lb. pkg. with young laying queen	$4.50	$4.25	$4.00
3 lb. pkg. with young laying queen	5.50	5.25	5.00
4 lb. pkg. with young laying queen	6.50	6.25	6.00
Extra Queens	1.50	1.40	1.30

Shipments by Express, Parcel Post or your Truck — Quality Does Not Cost — It Pays

THE WILBANKS APIARIES — **Claxton, Georgia**

PLANT'S BEES

Year after year dependability quality service.

	1 to 9	10 to 50	51 up
2-lb. pkg. with queen	$4.50	$4.25	$4.00
3-lb. pkg. with queen	5.70	5.45	5.20
Queens	1.45	1.35	1.25

Larger packages at $1.20 per each additional pound. No charge to clip, mark, airmail queens.

W. E. PLANT Rt. 2 Hattiesburg, Miss.

JENSEN'S PACKAGE BEES AND QUEENS

PACKAGES WITH DADANT "STARLINE" HYBRID QUEENS

	1-24	25-99	100-up
2 lb.	$4.80	$4.55	$4.30
3 lb.	5.90	5.65	5.40
4 lb.	7.00	6.75	6.50

Starline —QUEENS— Magnolia

$1.75 $1.65 $1.55 — $1.45 $1.35 $1.25

Clipped and Marked Free.

PACKAGES WITH JENSEN'S "MAGNOLIA STATE" ITALIAN QUEENS

	1-24	25-99	100-up
2 lb.	$4.50	$4.25	$4.00
3 lb.	5.60	5.35	5.10
4 lb.	6.70	6.45	6.20

Reg. U. S. Pat. Off.

Air Mail Postage Paid.

MACON MISSISSIPPI — Phone 170J

PACKAGE BEES & QUEENS
And ROYAL JELLY
Write for Prices

JACKSON APIARIES
P. O. Box 58 Funston, Ga.

ITALIAN QUEENS

1-24	$1.10
25 up	1.00

until June 15

DAN W. ALVIES
670 Roe Road Paradise, Calif.

HOMAN'S
QUALITY BRED CAUCASIAN or ITALIAN BEES & QUEENS

2-lb. w/q	$3.75
3-lb. w/q	4.75
4-lb. w/q	5.75
5-lb. w/q	6.75
QUEENS	1.15

All queens postpaid airmail. Health certificate and live arrival guaranteed.

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Classified rates: 18¢ per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Copy should be in by the 10th of the month, preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. HUBBARD APIARIES, ONSTED, MICHIGAN.

IOWA honey, one can or truck loads. RUSSELL D. SMALLEY, BEAVER, IOWA.

CLOVER extracted honey in sixties. ABRAM BRUBAKER, 1525 September Dr., LANCASTER, PA.

TUPELO, wild flower in 60's. Honey candy. LANCASTER COUNTY DUTCH GOLD APIARIES, 910 State Street, LANCASTER, PA.

HONEY—In any size container, also Mail Order Dealer for Bee Supplies. Write for prices. L. E. ALLEN, TIPTON, MICH.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. DEER CREEK HONEY FARMS, LONDON, OHIO.

CASH FOR BEESWAX. Write as to quantity and we will quote price. MUENCH-KREUZER CANDLE CO., INC., SYRACUSE, N. Y.

WANTED—White extracted or comb honey. Send sample. MILLERSPORT HONEY CO., MILLERSPORT, OHIO.

BEESWAX WANTED—Highest prices paid in cash or trade for bee supplies. THE A. I. ROOT COMPANY, MEDINA, OHIO; COUNCIL BLUFFS, IOWA; SAN ANTONIO, TEXAS.

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. WALTER T. KELLEY CO., CLARKSON, KY.

WANTED — Light amber clover, fall flowers, buckwheat and white clover. Send sample and lowest price. CLOVERDALE HONEY CO., FREDONIA, N. Y.

WANTED—Buckwheat and light amber honey. EASTERN FOOD PRODUCTS, 421 BEDFORD AVE., BROOKLYN, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. STOLLER HONEY FARMS, LATTY, OHIO.

ALL GRADES extracted honey wanted in both 60 pound cans and 600 pound drums. PRAIRIE VIEW HONEY CO., 12303 12th St., DETROIT 6, MICHIGAN.

WANTED—White and Extra Light Amber Honey, 60 pound Cans or Drums. HUBBARD APIARIES, ONSTED, MICHIGAN.

WANTED—Honey in 60 pound cans, also beeswax any quantity. L. E. ALLEN, TIPTON, MICH.

HONEY WANTED for bottling, all types in drums, tins, trailer and car lots. Send samples each lot. Write: CHAS E. FARRIS CO., 99 Hudson Street, NEW YORK CITY. Est. since 1910.

We render cappings, old combs and buy your beeswax. Shipping tags sent on request.—M. R. CARY CORP., GPO Box 818, SYRACUSE 1, N. Y.

WANTED: Honey—water-white, light amber and buckwheat extracted and comb. Send samples and prices. M. R. CARY CORP., GPO Box 818, SYRACUSE 1, NEW YORK.

WANTED—comb, chunk, and extracted honey. Send sample and price. RONALD CULP, CIRCLEVILLE, OHIO.

WANTED—Producers of light clover honey to super chunk comb frames for us, 1960. Write: MAYHEW HONEY FARMS, CLARKSON, KY.

FOR SALE

•WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. HUBBARD APIARIES, Manufacturers of Beekeepers' Supplies and Comb Foundation, ONSTED, MICHIGAN.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

QUEENBEE PAINTING OUTFITS, $1.50. INTERLOOKERS, $3.00 postpaid. SOUTHWICK APIARIES, WABAN, MASS.

FREE CATALOG—Cypress bee hives and bee supplies. Save up to 40% on hives that last. MYERS CRAFT MANUFACTURING CO., BURGAW, NORTH CAROLINA.

FOR SALE—800 one story 10-frame hives of bees, $8.00 per colony, midwest, discount truck lots. Health certificate furnished. BOX W.B.F., GLEANINGS, MEDINA, OHIO.

BEST WHITE GRANULATED SUGAR BY THE BAG or truckload. Good stock at all times for Bee Feed. HUBBARD APARIES, ONSTED, MICHIGAN.

SULFA—TM-5 — TM-25 — for AFB and EFB. Ask for our low bulk prices. HUBBARD APIARIES, ONSTED, MICHIGAN.

$$$$$ FRAMES & SUPERS — Factory prices. Frames 9 1/8, 1-100, 12¢; 100-1000, 10¢; 1000 or more, 8¢. Supers, 9 5/8 depth, 1-12, $1.35; 25-100, $1.25; 100-1000, $1.15. Write for free catalog. KEHM BROTHERS APIARIES, Box 346, Rt. 1, GRAND ISLAND, NEBRASKA. Located 2 miles North of Drive-Inn Theater.

FOR SALE—On account of health, 50 two story colonies of bees, $12.00 each. 200 shallow supers with drawn combs at 95¢ each. L. M. HUNTER, 317 Eddy Street, ITHACA, N. Y.

FOR SALE—Complete, modern, up-to-date, fully equipped bee business. 700 colonies. 40 by 80 two story honey house. Three bedroom modern home. Retiring. J. D. HARRAH, CHARLO, MONT.

FOR SALE: HONEY BOTTLING EQUIPMENT—16 sheet Cellulo Filter complete with pump, motor, drip pan, stand, all in good condition. One electro-flow bottle filler in A-1 condition. One National "Liquid" Carbonic Corp. semi-automatic labeler complete with attachments for oval and round jars. . . . Also, miscellaneous parts. One Taco flash heater and mixing tank with agitator. Five lengths of roller track with stands. One steam boiler (8 gallon size) with gas burner. Honey liquifying tank for 36 cans, with automatic gas burners with aqua-stat. Miscellaneous items such as filter aid, filter paper, etc. Complete outfit for sale at $2,000.00 f.o.b. BLAIR NEBR., W. E. BAXTER.

IF YOU HAVE NOT received our All New 1960 Catalog describing new items at bargain prices, please request. 100% Pure Beeswax Foundations, Top-Quality Western-Pine Wooden Supplies. We manufacture our own Bee Comb Foundation and Wooden Bee Supplies, HUBBARD APIARIES, ONSTED, MICHIGAN.

1,500 HOLDERS and FENCES for 4 x 5 sections (used one season) make offer. MARTIN J. KRUTZECK, WILAWANA, PENNSYLVANIA.

REDUCING BEE BUSINESS—20 3-story colonies, 150 bodies brood combs, 25 bodies, K.D., new honey pump, 200 60-lb. cans, used. No disease. ERNEST FAHLBECK, 406 South Springfield Avenue, ROCKFORD, ILL.

DIXIE COVERALL paper containers and closures; 1,000 No. 2866 and 2168-8 oz., 1,000 No. 2886 and 500 No. 2186-16 oz. LYMAN APIARIES, GREENWICH, N. Y.

USED BEE EQUIPMENT—Thoroughly sterilized and clean. Inspection certificate furnished. C. L. McCLAIN, R. 3, PINCONNING, MICH.

FOR SALE: 2-½ story colonies in Northern Ohio; also, extra supers. Box 25, GLEANINGS.

250 hives of bees or any part thereof, $10.00. Have to feed your bees? 150 supers of good honey for sale. H. A. FRANKE, UVALDE, TEXAS.

FOR SALE—100 strong colonies, 10-frame, two stories high. DON F. KLOEPFER, Rt. 3, GRAND LEDGE, MICH.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

CARNIOLAN and CAUCASIAN Bees for 1960. Booking queens. Each, $1.00; 2-pound bees with queen, $4.00. 3-pound bees with queen, $5.00. LEWIS & TILLERY BEE CO., RT. 3, BOX 251, DU 2-8371, GREENVILLE, ALABAMA.

WALKER'S high producing Italians, 3-lb. with queen, $5.25; 2-lb., $4.25, extra queens, $1.35. Discount on large orders and truck loads. Also comb nuclei. G. C. WALKER, Box 894, PHARR, TEXAS.

200 NUCLEUS hives, 4 or 5 frame nucs, available April 15th. ROBERT GOUGH, Route 5, Box 196, EUGENE, OREGON.

BOOSTER BEES—70 cents pound in your cages after May 15. Can supply new cages and queens. A. V. DOWLING, North St., VALDOSTA, GA.

PACKAGE BEES, QUEENS—Best Quality and Service. Write for prices. HUBBARD APIARIES, ONSTED, MICHIGAN.

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

"SWARMING STOPPED COLD"
95% Foolproof
No Gimmicks
No Gadgets
No Tricks
Bigger Crops - Better Beekeeping
Full Directions Price $1.00
BAKER'S APIARIES
Glencoe Illinois

Exchange Your Beeswax For Foundation
Write for Price List.
WAX WORKERS, INC.
1330 Slaterville Road Ithaca, N. Y.

CANADA'S
National Monthly Magazine for Beekeepers
Canadian Bee Journal
Streetsville, Ontario, Canada

HARPER'S FAMOUS
HIGH QUALITY ITALIAN
QUEENS & PACKAGE BEES
For 1960

	Queens	2 lb. w/q	3-lb. w/q
1-29	$1.25	$4.00	$5.00
30 & Up	1.15	3.75	4.75

All Queens Postpaid, Airmail. Health Certificate and Live Arrival Guaranteed. Please let us have your requirements early.
CARLUS T. HARPER
New Brockton, Alabama

HOLLOPETER'S
HARDY NORTHERN ITALIAN QUEENS
June-November. Our 49th year.
WHITE PINE BEE FARMS Rockton, Pa.

DADANT STARLINE HYBRIDS—QUALITY QUEENS and PACKAGE BEES. Queens, $1.70 each, Airmailed. 2-lbs. bees with queen, $4.95, ship. wt. 6 lbs. 3-lbs. and queen, $5.70, wt. 7 lbs. Add postage if by mail. Express collect. For Italian queens deduct 45¢ per queen. Quantity prices on request. Book early without deposit. Shipments begin April 1st. Full weight, live bees, at destination, personal service. Health certificate. Queens clipped and marked if desired, 10¢. S. J. HEAD, CROSSETT, ARKANSAS. **WHERE YOUR BUSINESS IS APPRECIATED.**

ITALIAN and CARNIOLAN BEES — 3 pounds, $5.00, 5 pounds, $6.90, queens, $1.30. LUTHER PICKETT, EFLAND, N. C.

200 COLONIES with the pollination business. M. P. TRAPHAGEN, HUNTER, N. Y.

QUALITY ITALIAN QUEEN BEES — Until June 1st. Each, $1.25; 5 or more, $1.20 each; 25 or more, $1.15 each. Write for package bee prices. A. G. WOODMAN CO., GRAND RAPIDS, MICH., or LENA, S. C.

JOE'S HIGH QUALITY Italian Bees and Queens. 3 lbs. with queen, $4.50; 4 lbs. with queen, $5.25. Queenless packages, deduct $1.10 per package. Live delivery, health certificate, and full weight packages guaranteed. JOE ROY APIARIES, HESSMER, LA.

TWENTY-FIVE 10-frame, 2-story colonies, Italians and Caucasians, $10.00 each. Requeened in August. A. I. Root equipment. MATHEW VELEK, 5144 Stanley Ave., MAPLE HTS., 37, OHIO.

BRIGHT ITALIANS — 3 lb. w/q, $5.00; 2 lb. w/q, $4.50, F.O.B. Aberdeen; Queens, $1.50. SHEPPARD APIARIES, ABERDEEN, N. C.

ROYAL JELLY

ROYAL JELLY—$12.00 per ounce, postpaid. Write for prices in large lots. THE STOVER APIARIES, MAYHEW, MISS.

SUPER STRENGTH 100 mg. Royal Jelly capsules in bottles of 100 for $10.00. PRAIRIE VIEW HONEY CO., 12303 Twelfth St., DETROIT 6, MICH.

12 pounds ROYAL JELLY at $10.00 per ounce. GARON BEE COMPANY, DONALDSONVILLE, LA.

ROYAL JELLY—The finest pure and fresh, during all winter. Pound, $80.00; ½ pound, $45.00. Airmailed. A. VALLOTTON, Rt. 1, Box 22, HOLTVILLE, CALIF.

MISCELLANEOUS

BEES REMOVED from house or tree or hive without touching either house or bees. Bees will then move honey into hive. Save property, honey, and bees with my method. Send $2.00 for details. Satisfaction guaranteed. GEORGE HAWKINS, RT. 1, LAWSON, MO.

SWARM CONTROL—Our Bee swarming has been most satisfactorily controlled since using "Baker's Swarm Manipulation." Yard averaged 270 lbs. (Testimonial: S. & H. Apiaries, Chicago, Illinois) For further details see Ad by BAKER'S APIARIES

NEED SUPERS with comb. Write REED BITTERS, Box 120, LOGAN, UTAH.

APPLY BEESTROY in your locality. Charge for services. Block infiltration of wild bees and EFB into your own stock. Dealer price, $18.00 per dozen from VALLEY APIARIES, Rt. 2, Box 23, PROPHETSTOWN, ILLINOIS.

SEEDS

HONEY PLANTS — Ask for catalog. Try these UNUSUAL NECTAR YIELDERS: VITEX negundo, shrub, 4 plants, $2.50; BEE BEE TREE, 2 plants, $3.50; one packet seed each, five unusual honey plants, $1.00; postpaid. PELLETT GARDENS, ATLANTIC, IOWA.

WANTED

WANTED—Used 30-frame extractor. B. H. COBB, R. 4, Box 57, RAYVILLE, LA.

WANTED—Two married men preferred for bee work, year round, starting April 1st. Right men, top wages. GILBERT H. BURMESTER, Box 175, LOGANSVILLE, WISCONSIN.

WANTED—8-frame queen excluders. GEORGE BENOIT, Route 48, BALDWINSVILLE, N. Y.

WANTED—McElroy uncapping machine. ANCEL'S SNOWBERRY APIARIES, E. 9207 Broadway, SPOKANE, WASH.

POSITION WANTED

SINGLE MAN, 36, now employed at Alaska Experimental Farm, would like permanent position preferably in Washington or Oregon. Several years experience as small beekeeper. WM. F. BACHMAN, Box 558, COLLEGE, ALASKA.

HELP WANTED

WANTED—Beeman for Louisiana or South Dakota. LIONEL HOPKINS, MARINGOUIN, LA.

WANTED: Seasonal or year around man for our apiary work. HOWARD WEAVER & SONS, NAVASOTA, TEXAS.

AMBITIOUS YOUNG MAN, single preferred to work with large migratory beekeeping outfit. Fast advancement for right man. Start immediately. PAUL ENGELHARDT, ANTWERP, N. Y.

MAGAZINES

THE SCOTTISH BEEKEEPER (The official organ of the Scottish Beekeepers' Association.) Scottish in character, international in appeal. Annual subscription $2 post free. Sample copy from ROBERT N. H. SKILLING, F.S.C.T., 87 KING STREET, KILMARNOCK, AYSHIRE.

Archiv fur Bienkunde, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal in the world. Praised again and again for its decades of independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. BIENEN VERLAG, GIELBELBACHSTR. 19, LINDAU (B) GERMANY.

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information on range sheep than any other magazine published. Subscription, $3.00. BOX 189, SAN ANGELO, TEXAS.

BEE WORLD, the international journal of the Bee Research Association published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $5.50 per annum, or $6.00 including membership of the Bee Research Association. Apicultural Abstracts only $4.50 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 BARNETT WOOD LANE, ASHTEAD, SURREY, ENGLAND.

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INDIAN BEE JOURNAL, know interesting facts concerning the honeybees of India. The only Bee Journal of India published in English. Subscription Rs. 12/- or Sh. 17/6d (Sterling) or $2.75 per year (INTERNATIONAL M.O.). Sample copy 2s. or 25 cents. Can be had from: The Managing Editor, Indian Bee Journal, Naini Tal, U.P., India.

FRUIT POLLINATION

(Continued from page 170)

to perform cross-pollination. Lack of suitable pollen in an orchard can be corrected by the use of processed pollen. The most economical method of using this pollen is in pollen inserts in beehives.

4. **Bees should be moved into an orchard only when there is sufficient bloom to make this source attractive to them.**

5. Pollen should be supplied for the initial bee flight in the new location.

6. Rotation of colonies permits maximum efficiency with a fairly small number of colonies.

This article appeared in the April 1957 issue of American Fruit Grower, Willoughby, Ohio.

ITALIAN QUEENS

1 to 10	$1.35
11 to 25	1.25
25 to 100	1.20
100 or more	1.15

Guaranteed no disease.
Guaranteed live delivery

L. E. FROEHNER
3610 Bolin St. HOUSTON 24, TEXAS

New Price Schedule for 1960

APRIL BEES

2-lb. pkg. with queen	$4.50
3-lb. pkg. with queen	5.50
QUEENS, each	1.45
10 or more, each	1.25

MAY BEES

2-lb. pkg. with queen	$4.00
3-lb. pkg. with queen	5.00
QUEENS, each	1.25
10 or more, each	1.10

10% DISCOUNT on orders booked 30 days in advance of shipping date.
10% DISCOUNT to recognized dealers and Co-ops on all orders. (Only one discount to apply.)
SHIPMENT by Parcel Post or Express. For Parcel Post add $1.30 for 2-lb. package, $1.50 for 3-lb. package.
BOOK orders without deposit.
REMIT before shipment.

J. F. McVay
Jackson Alabama

J. L. O'FERRELL & SONS
Producers of Queens, Package Bees & Honey
Dadants Midnite Hybrids
Carniolan & Caucas.ans
409 O'Ferrell Street
LA BELLE, FLA. GREENSBORO, N. C.
PURE FRESH ROYAL JELLY
PACKAGES WITH MIDNITE QUEENS

Quantity	1-24	25-99	100 up
2 lb.	$4.80	$4.55	$4.30
3 lb.	6.00	5.75	5.50
4 lb.	7.20	6.95	6.70
EXTRA MIDNITE QUEENS	$1.75	$1.65	$1.55

PACKAGES WITH CARNIOLAN & CAUCASIAN QUEENS

Quantity	1-24	25-99	100 up
2 lb.	$4.50	$4.25	$4.00
3 lb.	5.70	5.45	5.20
4 lb.	6.90	6.65	6.40
EXTRA CARNIOLAN & CAUCASIAN QUEENS	$1.45	$1.35	$1.25

All tested queens, $2.50.
Clipped and Marked Queens, 10¢ each, extra

Norman's

Improved 3-Band Italian Bees and Queens from top honey producing hives.

2 lb. pkg. w/q	$3.75
3 lb. pkg. w/q	4.75
4 lb. pkg. w/q	5.75
Queens	1.00

Liberal overweight, safe arrival guaranteed, with health certificate furnished. 10% books your order.

Norman Bee Co.
Rt. 1 Ramer, Ala.

QUEENS

Italians	Caucasians
1-24	$1.25
25-100	1.10
3-lb. pkgs. w/q, each	5.25

Book your order today.
No deposit required.
Ready April 1st.
Satisfaction guaranteed.

MOREHEAD & SONS
Funston, Ga.

GASPARD'S
Quality Italian Bees & Queens
2 lb. pkg. w/q $3.50
3 lb. pkg. w/q 4.25
4 lb. pkg. w/q 5.10
5 lb. pkg. w/q 6.20
EXTRA QUEENS
1-9 ....$1.10 10 up $1.00
Health certificate, live delivery guaranteed.
10% books your order, balance
10 days before shipping date.
GASPARD BEE CO.
HESSMER, LA.

WILLIAMS ITALIAN QUEENS
LARGE LEATHER COLORED
THREE-BANDED
QUALITY SUPREME
CERTIFICATE WITH EACH SHIPMENT
1-9 Air Mail .....$1.25 each
10-99 Air Mail ..... 1.15 each
100 Up Air Mail ..... 1.05 each
Queens clipped, 10¢ each, additional
PACKAGE BEES

	1-9	10 & up
2-lb. w/q	$3.80	$3.60
3-lb. w/q	4.80	4.60

Packages F.O.B. Shipping Point
DR. WILLIAMS APIARIES
115 W. Sterling Ave. Baytown, Texas

The time is drawing near:
Have you made your decision regarding the number and time you want
PACKAGE BEES
Place that order now. Usually we can start shipping March 20.

With Reg. Qn.	1-24	25-99	100 up
2 lb. bees	$4.50	$4.25	$4.00 ea.
3 lb. bees	5.70	5.45	5.20 ea.

For Island Hybrid add 30¢ each to above.
Queens clipped unless otherwise ordered. Marking queens 10¢ each extra.
"They Produce"
Rossman Apiaries
P.O.Box 133 Moultrie, Ga.
Phone: YUkon 5-6660

RESEARCH REVIEW

(Continued from page 157)

Division of the USDA. These maps might be of interest to beekeepers in areas where insecticides are being used extensively. Copies are available by writing: Survey and Detection Operations, Plant Pest Control Division, ARS, USDA, Washington, D. C. The title of the publication is **Distribution Maps.**

A Review of the Pollination Problem:

POLLINATION PROBLEMS including pollen dispensing, patterns for placing bees in orchards or seed fields, colony strength and methods of measuring it, the number of colonies per acre, poisoning, and other factors are discussed and reviewed in the article listed below. The authors have combined the tables of Anderson and Atkins, Johansen, and Palmer-Jones to show the toxicity of various insecticides to honeybees.

The section on placement patterns is of special interest. The authors state, "most effective pollination activity occurs within a radius of 100 yards from the colonies". A circle 200 yards in diameter contains six and one-half acres, thus where colonies are used at the rate of one per acre they may be placed in groups of six or seven and still provide very effective pollination. Where two colonies are desired per acre they may be placed in groups of 13 or 14 whereas when three colonies per acre are used they may be placed in groups of 20.

The authors state that the business of renting colonies for pollination apparently began about 1910. Considerable progress has been made since that time but more research needs to be done.

Todd, Frank E. and S. E. McGregor
The use of honeybees in the production of crops. Annual Review of Entomology 5:265-78. 1960.

J. E. WING & SONS
47 Years Continuous Service
Italian Package Bees
and Queens
Our Specialty
Knights Landing, Calif.

Shoot for profit - - - - Shoot for the STAR

Order STARLINE queens this season and profit.

PACKAGE	BEES WITH QUEENS 2 lb.	3 lb.	4 lb.	QUEENS Starline	Italian
1-24	$4.50	$5.70	$6.70	$1.70	$1.40
25-99	4.25	5.45	6.45	1.60	1.30
100-Up	4.00	5.20	6.20	1.50	1.20

Packages with Starline queens, add 30¢ per package.
Clipping 5¢ each queen, marking 5¢ each queen.

Reg. U. S. Pat. Off.

ALL QUEEN ORDERS SHIPPED POSTAGE PREPAID TO YOU.

GARON BEE COMPANY **DONALDSONVILLE, LA.**

CAUCASIAN QUEENS AND PACKAGES 1960 PRICES

Gentle, Industrious Caucasian bees and queens. Bred for greater honey production, gentleness, highly prolific, no excessive propolis, swarm control. Tested Queens, $2.50 each.

2 Lb. Pkg. Bees with young queen — $4.25 each
3 Lb. Pkg. Bees with young queen — 5.25 each
Extra Queens Any Amount — — — 1.25 each

A Certificate of Health and Live Delivery Guaranteed. We are prepared to fill all orders promptly. Come after your bees or have them shipped Express or Parcel Post. Send $1.00 per package deposit with order. Balance two weeks prior to shipping date. Queens clipped or marked 15¢ additional. For Parcel Post shipments add for 2 pounds, $1.30 and $1.50 for 3 pounds. Send us your order for 1 or 1,000. Try US.

CAUCASIAN APIARIES
P.O. Box 87 **Buckatunna, Mississippi**

ITALIAN PACKAGE BEES AND QUEENS

	1-24	25 or more
2 pound package bees with queen	$4.10	$3.75
3 pound package bees with queen	5.00	4.75

PACKAGE BEES F.O.B. RIO OSO, CALIF.

	1-5	6-24	25 & up
EXTRA QUEENS IN APRIL	$1.60	$1.35	$1.25
MAY & JUNE QUEENS	1.50	1.25	1.00

QUEENS POSTPAID — AIRMAIL IF IT WILL HELP SPEED DELIVERY
10% books your order. Balance 10 days before delivery.
Truck orders a specialty — Write for details.

JOHN S. SHACKELFORD **RIO OSO, CALIF.**
PHONE: WHEATLAND, CALIF. NEptune 3-2392

"1960 California Caucasians"

Gentle and industrious Caucasian queens. Hastings strain used for breeders. Bred for greater honey production. Gentleness, highly prolific. No excessive propolis. Swarm control and color. 10% books your order — balance two weeks prior to shipment. Air Mail. Start about April 10th. We do not clip or mark.

1 to 24 ..... $1.50 25 to 99 ..... $1.35 100 & up $1.25

QUALITY AND SERVICE DOESN'T COST — IT PAYS

DON J. STRACHAN **Yuba City, Calif.**
Rt. 2, Box 83 **Phone Sherwood 23881**

When you think of

Bees & Queens

Think of:

Merrill Bee Co.

P. O. Box 115
State Line, Miss.

With normal weather all orders should go out on time as our bees are in good condition.

Our 100% satisfaction has been good for 48 years, let us prove it.

Packages with Queens (Italian only)

2 - lb. pkg.	**$3.75 any number**
3 - lb. pkg.	**4.75 any number**
Untested Queens	**1.10 any number**
Tested Queens	**1.50 any number**
For larger pkgs. add	**1.00 per lb.**

Terms $1.00 per package with orders balance before shipments.

PACKAGE BEES AND QUEENS

	PACKAGES WITH CAUCASIAN QUEENS			PACKAGES WITH DADANT "MIDNITE" HYBRID QUEENS		
	1-24	25-99	100-up	1-24	25-99	100-up
2-lbs.	$4.50	$4.25	$4.00	$4.80	$4.55	$4.30
3-lbs.	5.60	5.35	5.10	5.90	5.65	5.40
	EXTRA CAUCASIAN QUEENS			EXTRA "MIDNITE" QUEENS		
	$1.45	$1.35	$1.25	$1.75	$1.65	$1.55

For clipping and marking queens add 10¢ each.

Howard Weaver & Sons Navasota, Texas

Phone: 5-2836

ITALIAN & CAUCASIAN BEES AND QUEENS 1960 PRICES

Bees that stand test for Honey Gatherers, Gentleness, and very prolific. Bred from select hives, Fumidil fed grafting and queen yards. A certificate of health and live delivery guaranteed. All queens Air Mail. Tested Queens, each, $2.50.

	2 Lb.	3 Lb.	4 Lb.	5 Lb.	Queens
1 - 24	$4.50	$5.50	$6.50	$7.50	$1.45
25 - 99	4.25	5.25	6.25	7.25	1.35
100 - up	4.00	5.00	6.00	7.00	1.25

We are prepared to fill all orders promptly. Come after your bees or have them shipped Express or Parcel Post. Send $1.00 per package deposit, balance two weeks prior to shipping date. Parcel Post, add for 2 Lb. $1.30; 3 Lb. $1.50. Larger packages add $2.50.

SEND US YOUR ORDER FOR 1 or 1,000 — TRY US.

G. D. McCARY & SON BEE CO. BUCKATUNNA, MISSISSIPPI

MARCH QUEENS

We solicit orders for March delivery on queens. Plenty of open dates especially for queens. "GULF BREEZE" stock has proved productive and with prompt service you can plan with confidence of a fair deal.

QUANTITY	QUEENS	2 lb. pkg. w/q	3 lb. pkg. w/q	4 lb. pkg. w/q
1-9	$1.30	$4.50	$5.70	$6.90
10-49	1.25	4.25	5.45	6.65
50-Up	1.20	4.00	5.20	6.40

Clip and paint 5¢ each extra

BESSONET BEE COMPANY **Donaldsonville, La.**

WEAVER'S DARK ITALIANS

	Queens	2-lb. w/q	3-lb. w/q
1-11	$1.40	$4.50	$5.50
12-49	1.30	4.25	5.25
50 & up	1.25	4.00	5.00

Queens clipped or marked 5¢ extra

See how close you are to Navasota, Texas. Roads are good and direct. Trucks loaded efficiently.

34 Years Experience as a Commercial Shipper.

WEAVER APIARIES **Navasota, Texas**

QUALITY IN PACKAGE BEES AND QUEENS

Caucasian or Italian, gentle, highly productive. Health certificate, live arrival guaranteed.

Lots of	Queens	2 lb. w/q	3 lb. w/q	4 lb. w/q	5 lb. w/q
1 to 25	$1.50	$4.25	$5.35	$6.45	$7.55
26 to 99	1.35	4.00	5.05	6.10	7.15
100 up	1.20	3.75	4.75	5.75	6.75

FARRIS HOMAN **SHANNON, MISS.**

PACKAGE BEES AND QUEENS

Walker-Lee Co. Live Oak, Calif.

BETTER BRED QUEENS

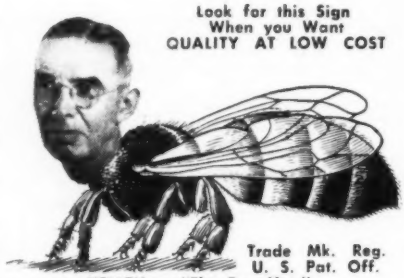
Three Banded Italians

The same reliable service, BETTER BRED bees and queens, Fumidil B fed and same shipping facilities will be yours when ordering from us. Help yourself and help us by booking now.

	Queens	2 lb. w/q	3 lb. w/q
1 to 24	$1.40	$4.25	$5.35
25 to 100	1.15	3.75	4.75

Phone Valley 9-6183 after 7 P.M.

CALVERT APIARIES **CALVERT, ALABAMA**



KELLEY — "The Bee Man"

KELLEY'S BEES

Improved three-banded Italian bees and queens direct from our own farm. Shipments start April 1st, express or parcel post shipment. Thousands of extra queens.

	Queens	2-lb. w/q	3-lb. w/q
1-24	$1.25	$4.25	$5.25
25-99	1.20	4.00	5.00
100-up	1.15	3.75	4.75

THE WALTER T. KELLEY CO.

Clarkson, Ky.

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